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SOIL SURVEY OF BOLIVAR COUNTY, MISSISSIPPI

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United States Department of Agriculture, Soil Conservation Service, in cooperation with the Mississippi Agricultual Experiment Station

General Nature of the Area

Agriculture is the principal industry in Bolivar County. Most of the farms are small. Cotton is the principal crop on most of them, but soybeans, rice, oats, and other field crops are also important.

Location and Extent

Bolivar County, the second largest county in the State, is in the northwestern part of Mississippi (fig. 1). It is bounded on the north by Coahoma County, on the east by Sunflower and Coahoma Counties, on the south by Washington County, and on the west by the Mississippi River. The county is about 41 miles long and 13 to 28 miles wide. Cleveland, the largest town and the county seat of the Second Judicial District, is about 105 miles northwest of Jackson, the State Capital, and 260 miles northwest of Biloxi. Rosedale is the county seat of the First Judicial District. The county has a land area of 917 square miles, or 586,880 acres, and a water area of 23 square miles, or 14,720 acres.

Physiography, Relief, and Drainage

The county lies entirely within the Mississippi Alluvial Plain (*2*),[2] also called the Mississippi River flood plain. Meanders, oxbow lakes, and crescent-shaped swamps are numerous throughout the area. Most of the stages that occur in the development of meander scrolls are represented in this county. Tributary streams and bayous of the Yazoo type cross the county from north to south.

Most of the county lies between 100 and 165 feet above sea level, the elevations becoming increasingly lower from north to south. The elevation at Alligator, in the northern part of the county, is 163 feet, and that at Shaw, in the southern part, is 130 feet. The elevation at Cleveland is 142 feet, and at Rosedale, which is near the Mississippi River, 143 feet. The gradient of the Mississippi River is less than one-tenth foot per mile.

Relief is typical of that in other parts of the Mississippi River flood plain. It ranges from level to sloping, but a large part is level or nearly level. Each of the small streams and bayous is fringed by its natural levee; many are bordered by escarpments 5 to 40 feet high. About

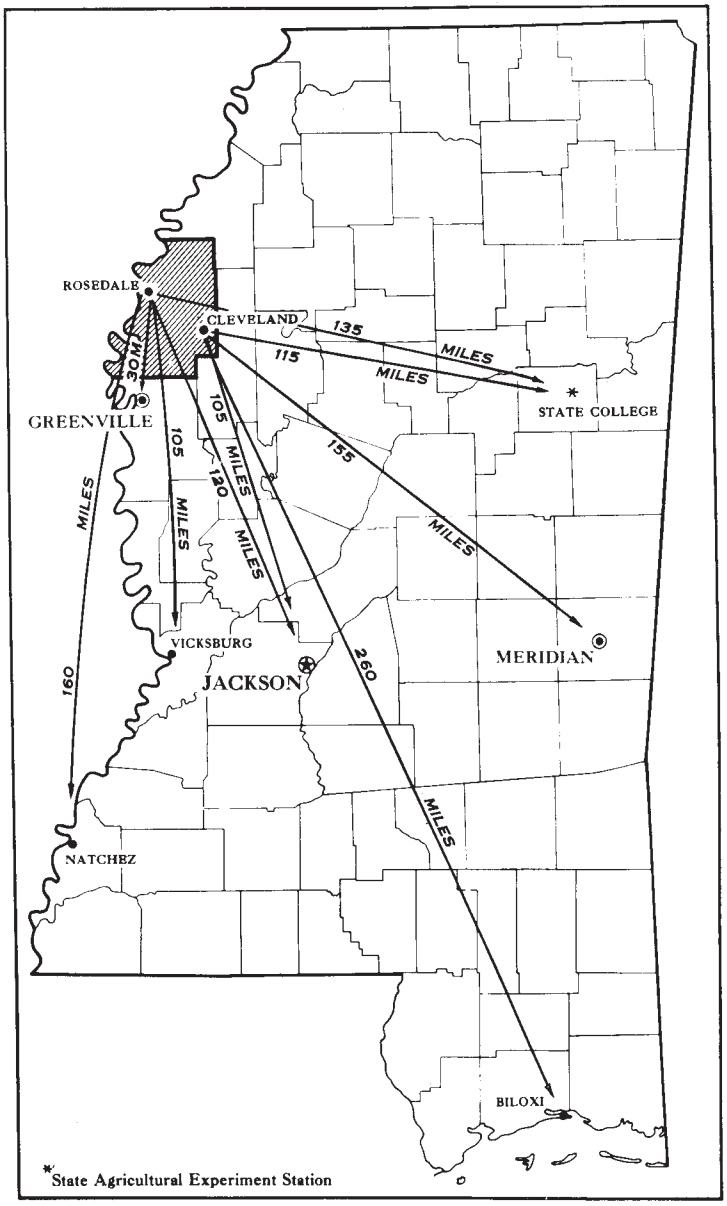


Figure 1.—Location of Bolivar County in Mississippi.

[1] Fieldwork for this survey was done when Soil Survey was part of the Bureau of Plant Industry, Soils, and Agricultural Engineering. Soil Survey was transferred to the Soil Conservation Service on November 15, 1952. R. C. Jurney, Soil Survey, Soil Conservation Service, assisted in writing the report.

[2] Italic numbers in parentheses refer to Literature Cited, p. 42.

55 miles of the Mississippi River levee is within the boundaries of the county.

The old meanders of the Mississippi River and its tributaries determine much of the natural drainage pattern of the county. Canals and ditches of various sizes have been constructed to accelerate surface runoff, particularly in the level to nearly level backwater areas where sediments of clay and silty clay have been deposited by slow-moving floodwaters.

The Sunflower River flows for about 8 miles through the county. This river enters the county at a point about 4 miles east of Merigold and flows out of it at a point about 6 miles to the south. The Hushpuckena River enters the county at about the center of the northern boundary, flows south and east, and leaves the county at a point about 6 miles east of Shelby. The principal smaller streams are Jones Bayou, Bogue Phalia, Harris Bayou, Snake Creek, Porter Bayou, and Deer Creek.

Climate

The climate of Bolivar County is the humid continental type. The summers are rather hot; the winters are mild. Climate varies only a little throughout the county. In winter the temperature seldom drops below zero or climbs above 70° F. In summer, temperatures seldom rise above 100° F. or fall below 60°. The average frost-free period of 220 days extends from March 27 to November 2.

Table 1, compiled from the records of the United States Weather Bureau at Scott, Miss., gives the normal monthly, seasonal, and annual temperatures and precipitation.

The rainfall is fairly well distributed throughout the year. Normally there are no prolonged dry or wet periods. There are, however, occasional dry periods that last long enough in summer and fall to injure crops and pasture. At times wet periods last long enough to injure crops, particularly on the poorly drained soils. The heaviest precipitation comes in winter and spring, and local flooding by the smaller streams and bayous is not unusual.

Winter weather frequently occurs in the following cycle: A slow rain; clearing and colder; frost; increasing humidity and cloudiness; and rain again. A typical summer day is bright and sunny, with an occasional cloud in the sky, a fairly high temperature, and little change in temperature during the day. Thundershowers in the afternoon and evening are common. In fall and spring the days are pleasant and comfortable.

Except for a few days early in spring, strong winds are not common. Damaging tornadoes and hailstorms do occur but are not usual.

Vegetation

The county was originally covered by vegetation comprised largely of hardwoods and a dense undergrowth of vines and canes. Most of the trees were various species

TABLE 1.—*Normal temperature and precipitation at Scott, Bolivar County, Miss.*

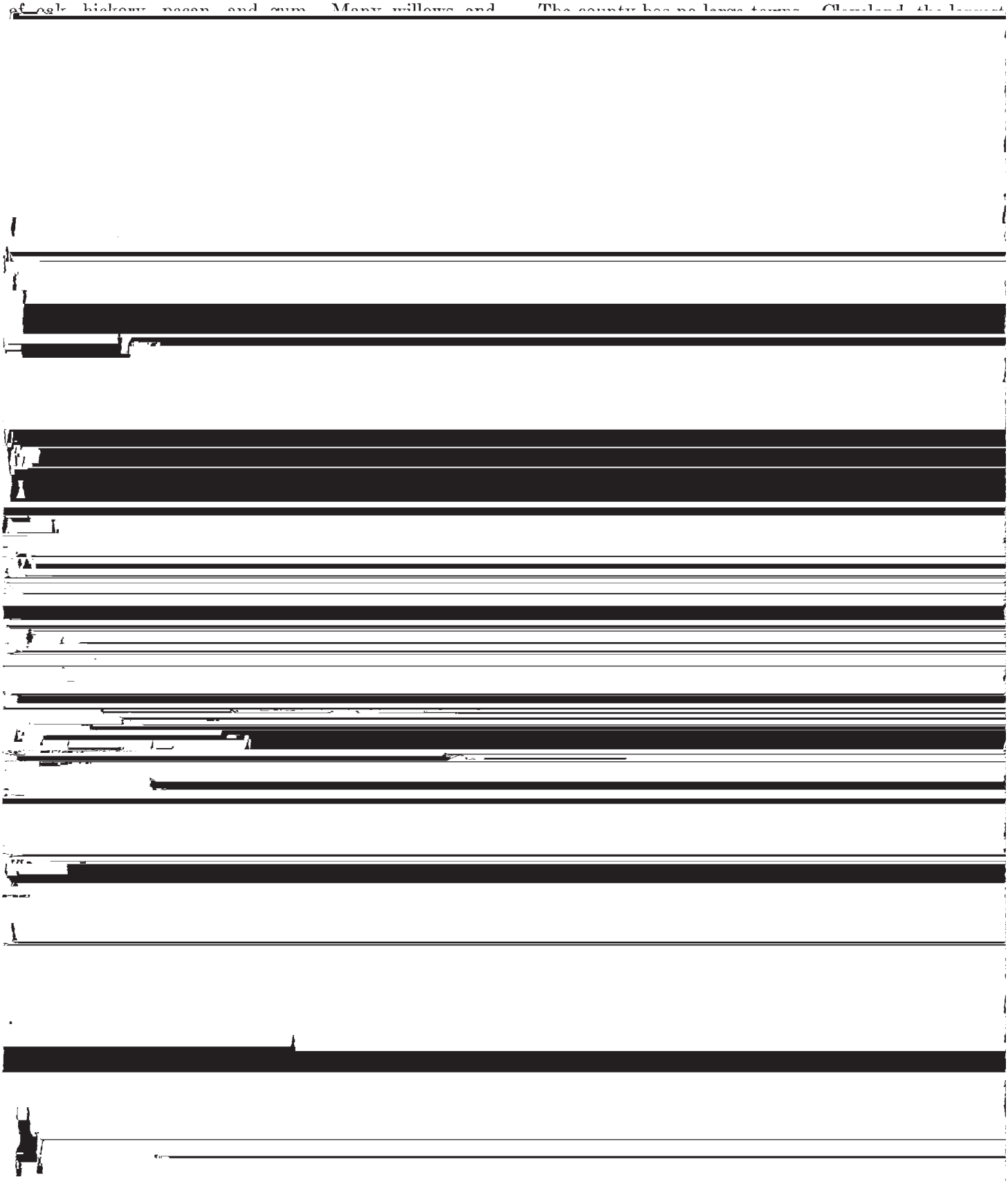
[Elevation, 137 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1924)	Wettest year (1923)	Average snowfall
	° F.	° F.	° F.	*Inches*	*Inches*	*Inches*	*Inches*
December	47. 3	84	−1	5. 65	3. 74	9. 14	0. 8
January	44. 9	79	1	4. 35	4. 64	4. 03	. 3
February	48. 5	83	17	3. 99	4. 36	5. 43	. 4
Winter	46. 9	84	−1	13. 99	12. 74	18. 60	1. 5
March	55. 4	88	19	4. 65	4. 63	4. 43	. 4
April	63. 4	92	30	4. 83	4. 01	12. 72	0
May	71. 0	96	39	5. 12	5. 00	8. 14	0
Spring	63. 3	96	19	14. 60	13. 64	25. 29	. 4
June	79. 0	100	50	3. 18	. 77	2. 71	0
July	81. 4	108	53	3. 66	. 52	7. 75	0
August	81. 1	106	53	3. 09	. 54	2. 67	0
Summer	80. 5	108	50	9. 93	1. 83	13. 13	0
September	75. 8	105	40	2. 92	4. 02	3. 93	0
October	65. 1	95	29	2. 96	0	4. 30	0
November	52. 9	85	18	3. 96	. 70	4. 40	. 5
Fall	64. 6	105	18	9. 84	4. 72	12. 63	. 5
Year	63. 8	108	−1	48. 36	32. 93	69. 65	2. 4

[1] Average temperature based on a 38-year record, through 1955; highest and lowest temperatures on a 10-year record, through 1930.

[2] Average precipitation based on a 38-year record, through 1955; wettest and driest years based on a 37-year record, in the period 1918–55; snowfall based on a 10-year record, through 1930.

of oak, hickory, pecan, and gum. Many willows and ... The county has no large towns. Cleveland, the largest



Types of Farms

In 1954, 291 farms in Bolivar County were miscellaneous and unclassified. The rest were listed by type of farm as follows:

	Number
Field-crop other than vegetable and fruit-and-nut	6, 482
Cash-grain	145
Cotton	6, 337
Dairy	17
Livestock other than dairy and poultry	24
General	19
Primarily crop	11
Crop and livestock	8

Crops

The acreage of all of the principal crops grown in Bolivar County has fluctuated considerably during the past few years. Table 2 shows the acreage of the principal crops and the number of fruit and nut trees and grapevines in the county for specified years.

TABLE 2.—*Acreage of the principal crops and number [1] of fruit and nut trees and grapevines of bearing age*

Crop	1939	1949	1954
	Acres	*Acres*	*Acres*
Cotton	160, 115	210, 583	137, 203
Corn for all purposes	87, 880	36, 129	19, 650
Small grains threshed or combined:			
Oats	14, 336	10, 894	25, 263
Rice	(2)	(2)	31, 685
Other grains	(2)	[3] 1, 879	14, 614
Soybeans:			
Grown alone	29, 430	33, 903	63, 069
Grown with other crops	6, 249	389	266
Hay:			
Alfalfa	17, 936	5, 570	1, 185
Lespedeza	714	12, 059	4, 743
Soybeans	(2)	10, 323	5, 297
Small grain	174	649	1, 149
Other	(2)	647	1, 595
Potatoes	220	[4] 22	[5] 15
Sweetpotatoes and yams	401	[4] 77	[5] 20
Vegetables harvested for sale [6]	33	105	150
	Number	*Number*	*Number* [7]

as compared to nearly 67 percent in 1949. Many farmers have diverted the soils that are poorly suited to cotton to other uses. Some areas, once used to grow cotton, are now pastured, and some are used to grow soybeans, rice, and feed crops.

Soybeans are second to cotton in importance. In 1954 they were grown for beans on 21 percent of the harvested cropland and for hay on about 2 percent.

Rice, reported alone in 1954 for the first time, was grown on 31,685 acres, or on about 10.4 percent of the harvested cropland. Ninety-two farms reported rice, and the yield was 1,819,344 bushels.

Oats, threshed or combined, occupied about 8.3 percent of the harvested cropland. They were grown on 681 farms and yielded 1,045,740 bushels.

Corn is grown on a large acreage but is not so important as it was in former years. In 1954, it was grown on 2,571 farms and occupied about 6.5 percent of the harvested cropland. Part of the crop was sold for cash.

A total of 14,614 acres was used in 1954 to grow grains other than soybeans, rice, oats, and corn. These grains were threshed or combined, and the crops were mostly sold off the farm.

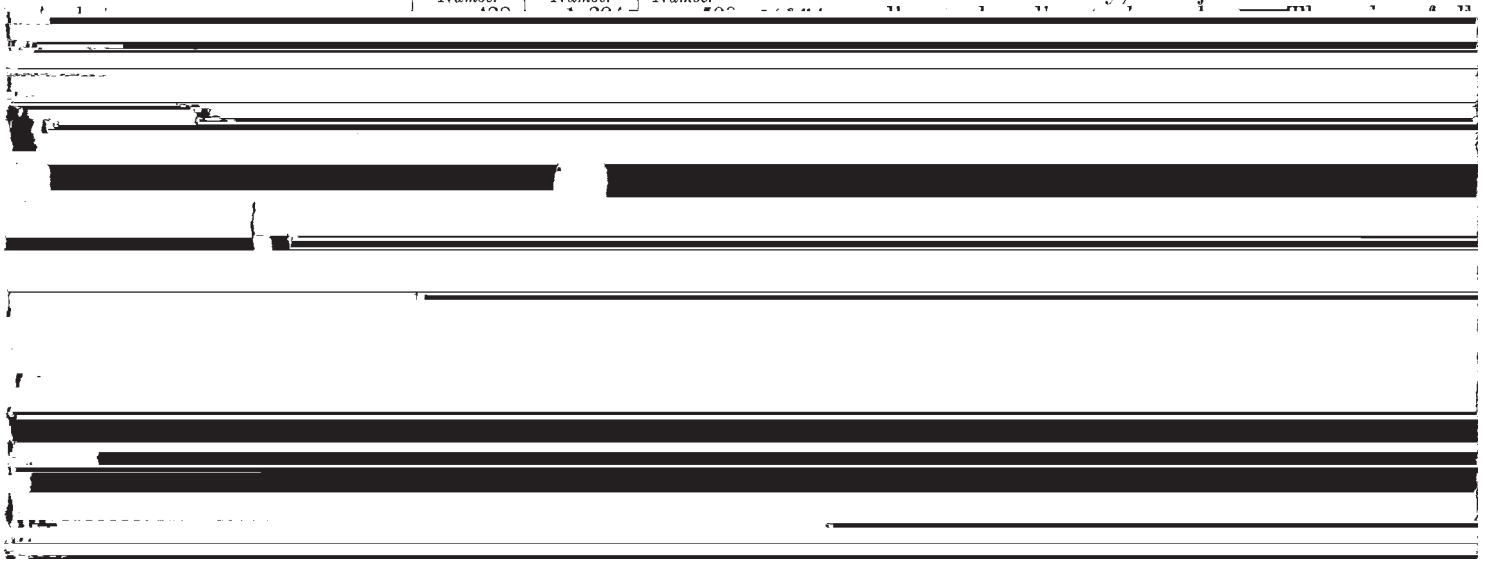
Of the hay crops reported in 1954, soybeans and lespedeza were grown on the largest acreages. Soybeans were grown for hay on about 2 percent of the harvested cropland, and lespedeza was grown on about 1.5 percent. Small grains were cut for hay on some farms, and alfalfa was grown on about 0.4 percent of the harvested cropland. Some farmers grow hay as a cash crop.

In 1954, 187 acres of lespedeza, or 200 acres less than was grown in 1954, was grown for seed. Crimson clover was grown for seed on only 8 acres, but 1,481 acres of other field seed crops was harvested.

Sweetpotatoes and yams were grown on many farms for home use or for sale. Irish potatoes were grown on a number of farms, but their acreage was not so large as that in sweetpotatoes and yams. Other vegetables were grown for home use on many of the farms, and 150 acres of vegetables was grown for sale.

Livestock and Livestock Products

On 41 farms in the county, a major source of income in



In 1954, 10,212 head of cattle, including calves, were sold alive. Also sold were 3,816 hogs and pigs, 1,359 sheep and lambs, 85 horses and mules, and 11,245 chickens. Livestock products sold included 73,879 dozens of chicken eggs, 667,065 gallons of whole milk, and 6,471 pounds of butterfat.

Tenure and Size of Farms

In 1954, tenants operated about 81 percent of the farms. Owners operated about 12.6 percent, and part-owners and managers operated about 6.4 percent. Tenants operated a total of 131,791 acres, owners 122,192 acres, and part-owners and managers 200,579 acres.

The size of the average farm in Bolivar County in 1954 was 67.5 acres. This was an increase from that in 1950, when the average-sized farm was 52 acres. Many of the tenant-operated farms are only 10 acres in size. Some farms are large. In 1954, 126 farms had 500 to 999 acres, and 89 farms were 1,000 acres or more in size.

Labor Supply

In 1954, a large share of the farms, 6,464, reported expenditures for machine hire, hired labor, or both. In addition to 2,588 hired [illegible]

How a Soil Survey Is Made

The scientist who makes a soil survey examines soils in the field, classifies the soils in accordance with facts that he observes, and maps their boundaries on an aerial photograph or other map.

FIELD STUDY.—The soil surveyor bores or digs many holes to see what the soils are like. The holes are not spaced in a regular pattern but are located according to the lay of the land. Usually they are not more than a quarter of a mile apart, and sometimes they are much closer. In most soils each boring or hole reveals several distinct layers, called *horizons*, which collectively are known as the soil *profile*. Each horizon is studied to see how it differs from others in the profile and to learn the things about this soil that influence its capacity to support plant growth.

Color is usually related to the amount of organic matter. The darker the surface soil, as a rule, the more organic matter it contains. Streaks and spots of gray, yellow, and brown in the lower layers generally indicate poor drainage and poor aeration.

Texture, or the content of sand, silt, and clay, is determined by the way the soil feels when rubbed between the fingers, and it is later checked by laboratory analysis. Texture determines how well the soil retains moisture, plant nutrients, and fertilizer and whether it is easy or

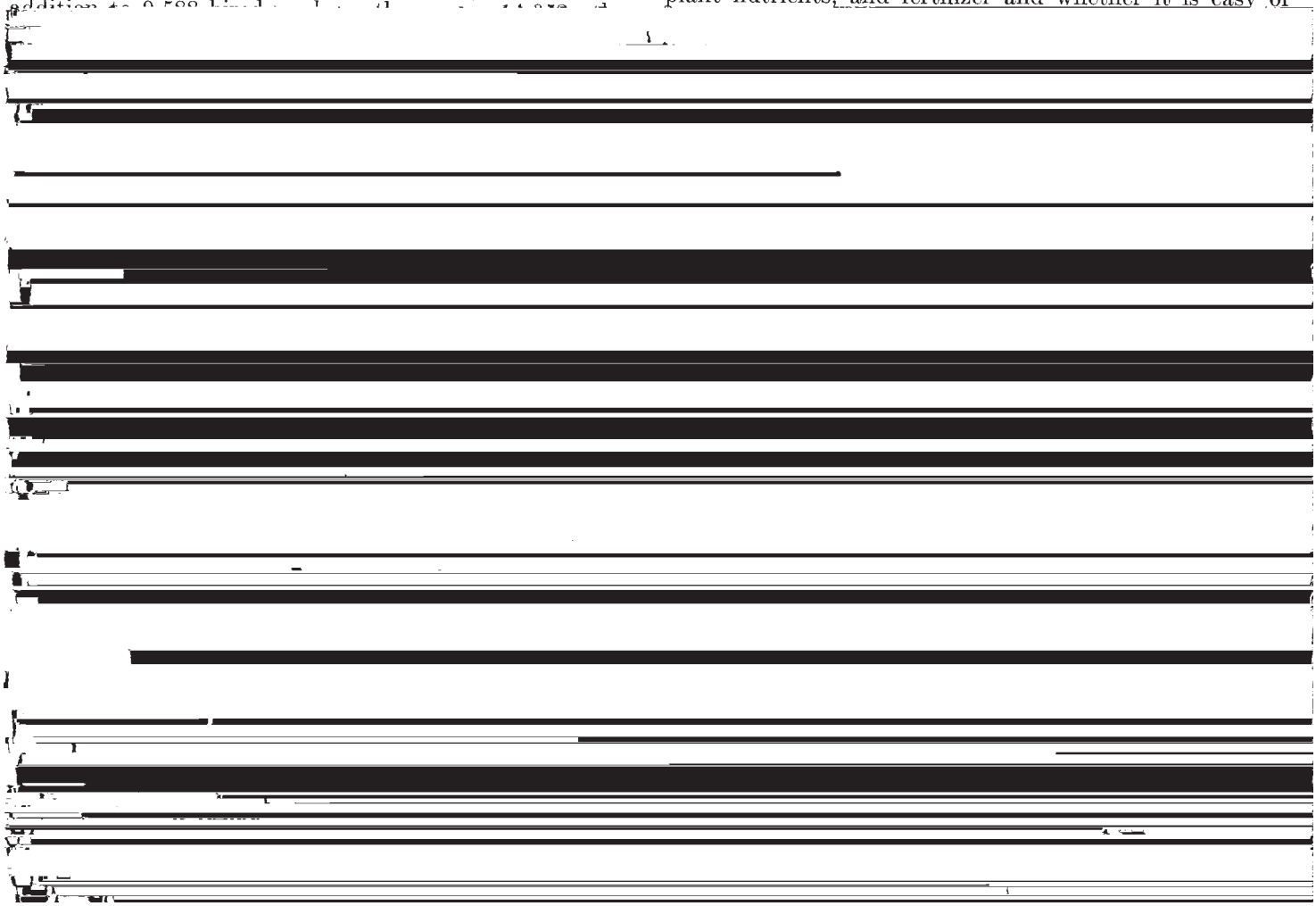


TABLE 4.—*Soil series arranged by parent material, and principal characteristics of the series*

SOILS DEVELOPED FROM MISSISSIPPI RIVER ALLUVIUM

Series	Topographic position	Slope	Natural drainage	Description
		Percent		
Alligator	Slack-water flats	0–7	Poor	Dominantly light-gray surface soil; gray clay subsoil mottled with yellowish brown.
Beulah	Old natural levees	½–3	Somewhat excessive	Light brownish-gray surface soil; light yellowish-brown fine sandy loam subsoil.
Bosket	Old natural levees	½–7	Good	Light brownish-gray surface soil; dark-brown to brown sandy clay loam subsoil.
Clack	Old natural levees	½–3	Excessive	Grayish-brown surface soil; grayish-brown to light brownish-gray loamy sand subsurface layer.
Commerce	Recent natural levees	½–3	Moderately good to somewhat poor.	Grayish-brown, dark-brown to grayish-brown, or dark grayish-brown to light brownish-gray surface soil; light brownish-gray or grayish-brown to dark grayish-brown silt loam, silty clay, or silty clay loam subsurface layer; some mottling.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Robinsonville soil, and their texture is finer. In a large acreage of these soils, the texture is predominantly silt loam throughout the profile.

The Mhoon soil is somewhat poorly drained to poorly drained. Of all the soils in this group, it occupies the lowest position on the recent natural levees. Its texture is predominantly silt loam.

Tunica, Sharkey, and Alligator Series

The soils of the Tunica, Sharkey, and Alligator series occur on the slack-water flats of the Mississippi River flood plain. These slack-water flats are broad, nearly level to gently sloping areas some distance from the present channel or from abandoned channels. In these parts of the flood plain, the floodwaters moved slowly and deposited only fine sediments, principally clay. The soils on these flats occur at lower elevations than the soils of the Crevasse, Robinsonville, Commerce, and Mhoon series. They have weakly developed profiles.

The Tunica soils are somewhat poorly drained. They are somewhat darker colored than the Alligator soils. They are slightly acid to neutral in reaction.

The Sharkey soils are poorly drained. They are medium acid to neutral in reaction. These soils are darker

The Pearson soils are moderately well drained. They are strongly acid to slightly acid and have medium profile development. Their surface soils and subsoils are mottled.

The Brittain soil is somewhat poorly drained. It is medium acid to slightly acid and has moderate profile development. Its subsoil is mottled.

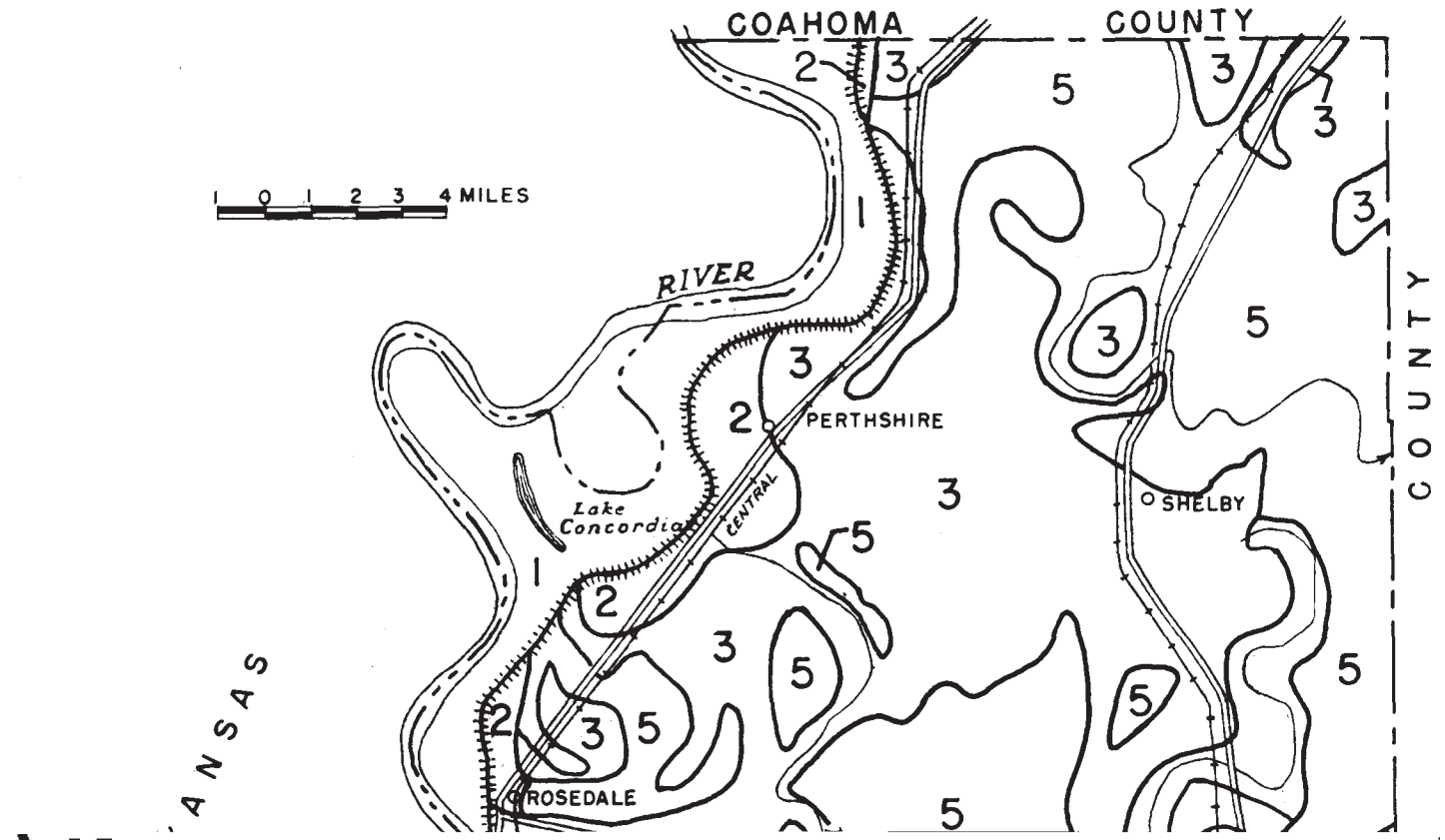
Miscellaneous land types

In addition to the soils of the 19 series, Alluvial soils, a miscellaneous land type, was mapped in this county. This land type consists mainly of soils of the Commerce and Robinsonville series, but to some extent it is made up of soils of the Mhoon and Crevasse series.

Soil Associations

Soil associations are groups of two or more soil series that appear in a recurring geographic pattern. The five associations of Bolivar County are shown in figure 2.

Soil association maps are useful in appraising the soil resources of large areas, as the planner must consider the proportion of the various soils and the pattern in which


COAHOMA COUNTY
0 1 2 3 4 MILES
RIVER
PERTHSHIRE
Lake Concordia
CENTRAL
SHELBY
ROSEDALE
ANSAS
COUNTY

Its western side is fringed by the Commerce-Robinsonville-Crevasse association. A narrow band extends along each side of Bogue Phalia in the central part of the county.

This association consists of soils developed on old natural levees and in depressions or channels of former streams. The principal series are the Forestdale, Dundee, Dubbs, Bosket, Beulah, and Clack, all on old natural levees. The Dowling and Souva soils occupy depressions or channels of former streams and occur as narrow strips

[redacted]

within large areas on the old natural levees.

In general, the relief is nearly level, but a few narrow strips have slopes of 7 to 10 percent. The soils are strongly acid to slightly acid. Their drainage ranges from poor to excessive. All are fairly easy to work and are easy to manage.

The soils are in capability classes I, II, III, and IV. They are among the most productive soils in the county. Cotton is the principal crop. Some parts of the association are used for soybeans, corn, small grains, hay, and pasture. Only a small part is in forest.

4. Brittain-Pearson-Dexter

The Brittain-Pearson-Dexter association occupies a narrow belt next to Jones and Porter Bayous in the southeastern and eastern parts of the county. This association consists of soils developed on old natural levees and in depressions. The principal series are the Brittain, Pearson, and Dexter on old natural levees and the Waverly in depressions. The Waverly soil occupies large areas

mostly in capability classes III and IV, but some of them are in capability class II.

Most of this association is used for crops. Cotton is grown on the larger part of the soils. But, because cotton yields have been decreasing, some of the acreage formerly used to grow cotton is now used for soybeans, rice, hay, and pasture. This association has a larger proportion in forest than the other associations. The forests consist of bottom-land hardwoods of various kinds. In some areas they occupy several square miles.

Soil Types and Phases

The soils of Bolivar County are described in detail in the following pages, and their use and suitability for agriculture are discussed. Some technical terms were used to make the soil descriptions concise and exact. Definitions of these terms have been given in the glossary, p.40. The approximate acreage and proportionate extent of the soils are given in table 5. Their location and distribution are shown on the soil map at the back of this report.

Alligator clay, nearly level phase (½ to 3 percent slopes) (Ab).—This is a fine-textured, poorly drained soil formed from Mississippi River alluvium. Locally it is called yellow buckshot. It is closely associated with Sharkey clay, nearly level phase. This soil is lighter colored, is slightly more acid, and has less structural development than the associated Sharkey soil. It occurs on the slack-

TABLE 5.—*Approximate acreage and proportionate extent of the soils*

Soil	Area	Extent	Soil	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Alligator clay:			Dundee-Clack soils:		
Nearly level phase	28, 593	5. 0	Nearly level phases	2, 251	0. 4
Level phase	810	. 1	Gently sloping phases	1, 665	. 3
Gently sloping phase	1, 042	. 2	Forestdale silt loam:		
Alligator silty clay:			Nearly level phase	21, 052	3. 6
Nearly level phase	7, 104	1. 2	Gently sloping phase	90	(1)
Level phase	227	(1)	Forestdale silty clay loam:		
Gently sloping phase	337	. 1	Nearly level phase	27, 136	4. 6
Alligator silty clay loam, nearly level phase	1, 311	. 2	Gently sloping phase	555	. 1

level phase.—The soil occurs on slack water flats, mainly [illegible] of bottomland hardwood [illegible]

The texture of the subsoil ranges from sandy clay loam to silty clay loam, and the texture of the underlying material ranges from very fine sandy loam to loamy sand.

The reaction of this soil is medium to slightly acid. The soil has a low supply of organic matter and moderate permeability and water-holding capacity.

Included with this soil in mapping are small nearly level areas of fine sandy loam and silty clay loam.

Use and suitability (unit I–1).—Bosket very fine sandy loam, nearly level phase, is one of the most desirable soils for row crops. It is used chiefly for cotton. Other crops grown are corn and forage. The soil is easy to work.

Bosket very fine sandy loam, gently sloping phase (3 to 7 percent slopes) (Bc).—This soil is similar to the nearly level phase of Bosket very fine sandy loam. The principal difference is that it occupies stronger slopes. It occurs mostly in long narrow strips near Bosket very fine sandy loam, nearly level phase.

This is a medium to slightly acid soil that is low in organic matter. Its permeability and water-holding capacity are moderate.

Included with this soil are small gently sloping areas of fine sandy loam that have both normal and moderate erosion; small gently sloping areas of very fine sandy loam that have moderate erosion; and a small sloping area of very fine sandy loam that has moderate erosion.

Use and suitability (unit IIe–1).—Cotton is the main crop grown on this soil. The soil is well suited to many crops, but because of its relatively strong slopes, it is subject to erosion. To reduce erosion and hold moisture in the soil, contour tillage and rotations that include close-growing crops should be used. This soil has good workability.

Brittain silt loam, nearly level phase (½ to 3 percent slopes) (Bd).—This is a dark-colored somewhat poorly drained soil. It occupies old natural levees along small tributary streams that flow from nearby loess uplands. Silty alluvium washed from the loess uplands was its parent material. This soil closely resembles Forestdale silt loam, nearly level phase. The chief difference is that it has a higher silt content throughout the profile.

This soil is associated with the Dexter and Pearson soils that were also derived from silty alluvium. It occurs near the Jones and Porter Bayous. In most places soils of the Dexter series, Pearson series, or both, occupy the space between it and the bayous. This soil has the largest acreage of any of the silty alluvial soils. Except for Waverly silt loam, local alluvium phase, it occurs at the lowest elevation of any of the soils derived from silty alluvium. The original growth was hardwoods of various kinds.

Profile description:

Surface soil (plow layer)
0 to 4 inches, dark grayish-brown very friable mellow silt loam; weak fine granular structure.
Subsoil
4 to 10 inches, gray to grayish-brown friable silt loam, mottled with shades of brown and yellow; structureless (massive).
Underlying material
10 to 40 inches, gray to light-gray friable silty clay loam, mottled with shades of yellow and brown; weak medium to coarse subangular blocky structure.

This soil is medium to slightly acid and low in organic matter. It is moderately permeable to roots, moisture, and air and has a moderate water-holding capacity.

Use and suitability (unit IIs–2).—Most of this soil is used for cotton, corn, and soybeans. Some parts are used for small grains, hay crops, and pasture.

The soil is generally considered good cropland, but in most places it requires some form of artificial drainage. It is easy to work.

Clack loamy sand, nearly level phase (½ to 3 percent slopes) (Ca).—This excessively drained soil has formed from coarse-textured Mississippi River alluvium. It occupies small areas on old natural levees that border former channels of the Mississippi River, or it lies along smaller streams on the flood plain of that river. The entire profile is sandy, and internal drainage is rapid. The native growth was a mixture of cottonwoods and hardwoods of various kinds.

Profile description:

Surface soil (plow layer)
0 to 6 inches, grayish-brown loose loamy sand; structureless (single grain).
Subsurface layer
6 to 14 inches, grayish-brown to light brownish-gray loose loamy sand; structureless (single grain).
Underlying material
14 to 36 inches, grayish-brown loose to very friable loamy sand; structureless (single grain).

The surface soil is 6 to 8 inches thick. In pastured areas the soil in the upper 2 inches is dark grayish-brown loose loamy sand. The underlying material ranges from loamy sand to sand.

The reaction of the soil is medium to strongly acid, and the content of organic matter is very low. The soil has rapid permeability and a low water-holding capacity.

As mapped, this soil includes small gently sloping areas that have both normal and moderate erosion, and small areas of Dundee, Dubbs, Bosket, and Beulah soils. Also included are small moderately eroded areas of Beulah loamy sand, nearly level phase, and Beulah loamy sand, gently sloping phase. These last two included soils are not mapped separately in the county.

Use and suitability (unit IVs–1).—Clack loamy sand, nearly level phase, is very poorly suited to row crops. It is fairly well suited to hay or pasture. Bermudagrass produces fair grazing once it is established. Kudzu and sericea lespedeza can be grown, but care must be taken in getting these crops established. Where a practical irrigation system has been installed, an intensive cropping system can be planned for the soil. This soil is very easy to work.

Clack sandy loam, nearly level phase (½ to 3 percent slopes) (Cb).—This soil is similar to Clack loamy sand, nearly level phase. The main difference is that it has a less coarse and slightly heavier textured surface soil. It has very rapid internal drainage. The original trees were cottonwoods and hardwoods of various kinds. The areas of this soil are small.

This soil has a grayish-brown friable sandy loam surface layer about 8 inches thick. The subsurface layer is grayish-brown to light brownish-gray loose loamy sand about 6 inches thick. The underlying material is grayish-brown loose to very friable loamy sand about 22 inches thick.

The reaction of this soil is medium to strongly acid. The soil is low in organic matter. It has rapid permeability and low water-holding capacity.

This soil includes small gently sloping areas that have been moderately eroded, as well as small nearly level areas

that have a very fine sandy loam, silty clay loam, or silty clay surface soil. The included areas are too small to be shown separately on the map.

Use and suitability (unit IVs–1).—Clack sandy loam, nearly level phase, is used for bermudagrass, sericea lespedeza, and kudzu. These provide fair amounts of forage. Unless this soil has been irrigated, it is not suitable for row crops. The soil has excellent workability.

Commerce silt loam (½ to 3 percent slopes) (Cc).—This nearly level soil is moderately well drained to somewhat poorly drained. It has formed from fine to moderately coarse textured Mississippi River alluvium. It occurs in narrow belts on recent natural levees that border the Mississippi River, or it lies along recently abandoned cutoffs or stream channels of the river. This soil is comparable to Dundee silt loam, nearly level phase, that occurs on old narrow levees. It differs in that it is neutral

As mapped, this soil includes small gently sloping areas and shallow nearly level areas.

Use and suitability (unit IIs–1).—Commerce silty clay loam is a desirable soil for most row crops. The largest acreage is planted to cotton, although corn and soybeans are grown.

The soil is only fairly easy to work. Natural drainageways usually remove surplus water, so runoff is seldom a problem.

Commerce silty clay (½ to 3 percent slopes) (Cd).—This is a nearly level, moderately well drained to somewhat poorly drained soil. It differs from Commerce silt loam mainly in having a fine-textured surface soil. It differs from Tunica silty clay, nearly level phase, chiefly in being neutral to alkaline instead of slightly acid to neutral.

The surface soil is dark grayish-brown to light brownish-gray

[redacted]

fine-textured alluvium washed from Sharkey soils and from other associated fine-textured soils. After each rain it receives water from the surrounding slopes. It remains wet longer than most of the soils. The native vegetation was bottom-land hardwoods and cypresses and a dense growth of vines, canes, and underbrush. The soil covers a total area of 80,563 acres.

Profile description:

Surface soil (plow layer)
0 to 4 inches, dark-gray firm clay; plastic when wet, and hard when dry; weak medium to fine granular structure.
Subsoil
4 to 24 inches, gray firm clay, faintly mottled with shades of brown; plastic when wet, and very hard when dry; structureless (massive).
Underlying material
24 to 40 inches, gray firm clay, faintly mottled with various shades of brown; very plastic when wet, and very hard when dry; structureless (massive).

This soil varies somewhat; in places the surface soil is stained almost black by organic matter, and in some areas the surface soil is silty clay loam.

This soil is slightly acid to neutral. It has a moderate amount of organic matter. Its permeability is very slow.

Use and suitability (unit IVw–3).—This soil is used to some extent for soybeans, late corn, and cotton. It is poorly suited to row crops. Late corn occasionally makes fair yields, but yields of cotton are seldom satisfactory. Soybean yields vary to a great extent. The soil is suited to rice, pasture, and temporary grazing in summer, and some areas are used for these purposes. This soil is very hard to work.

Dowling soils, overwash phases (0 to ½ percent slopes) (Dd).—These soils consist of areas of Dowling soils that have different surface soil textures. These textures range from clay to silt loam. They do not occur in any definite pattern. The soils occur in depressions and in channels of former streams. They occupy narrow strips, generally in association with soils on the slack-water flats. The soils have formed from local alluvium washed from the Sharkey soils and from coarser textured associated soils. They are poorly drained. The internal movement of water is very slow. Surface runoff usually is too slow to carry off the water that accumulates from the surrounding higher elevations.

These soils are slightly acid to neutral. They have a low supply of organic matter. They are very slowly permeable.

Included with these soils in mapping are some areas that were covered by a layer of loamy sand, 6 to 12 inches thick, during the flood of 1927. These included areas are near Scott.

Use and suitability (unit IIIw–1).—Dowling soils, overwash phases, are generally farmed in conjunction with adjoining soils. They are used to some extent for corn, soybeans, and pasture. Where drainage is adequate, [illegible] fairly good crops should serve as drainage outlets rather than be used for crops. The soils occur in some areas where they can be used along with adjoining soils for pasture. Such use is considered good when the soils occupy about as much acreage as adjoining better drained soils.

Dubbs very fine sandy loam, nearly level phase (½ to 3 percent slopes) (De).—This soil is moderately well drained to well drained. It has formed from stratified moderately coarse textured to fine textured Mississippi River alluvium. Its profile is moderately well developed. The soil occurs in small areas on old natural levees that border former channels of the Mississippi River and small streams of the flood plain. The native trees were hardwoods of various kinds.

Profile description:

Surface soil (plow layer)
0 to 8 inches, grayish-brown friable very fine sandy loam; weak fine granular structure.
Subsoil
8 to 20 inches, yellowish-brown firm silty clay loam; plastic when wet, and slightly hard when dry; weak medium blocky structure.
20 to 36 inches, dark yellowish-brown friable fine sandy loam; weak medium subangular blocky structure.
Underlying material
36 to 50 inches, yellowish-brown very friable loamy sand.

In some small areas the texture of the surface soil is silt loam or silty clay loam.

This soil is strongly to slightly acid and is low in organic matter. It is moderately permeable and has a moderate water-holding capacity.

Use and suitability (unit I–1).—Practically all of this soil is used for row crops, chiefly cotton and corn, and yields are usually high. This soil is easy to work.

Dubbs very fine sandy loam, gently sloping phase (3 to 7 percent slopes) (Dg).—This soil is similar to Dubbs very fine sandy loam, nearly level phase, but it has stronger slopes and is more variable in the thickness of its profile layers. It occupies narrow strips on the old natural levees. Most of it occurs next to areas of Dubbs very fine sandy loam, nearly level phase.

This soil is strongly to slightly acid and is low in organic matter. It is moderately permeable and has a moderate water-holding capacity.

Mapped with this soil are small areas that are moderately eroded, small areas that have a silt loam or fine sandy loam surface soil, and small sloping areas that are principally in forest.

Use and suitability (unit IIe–1).—Dubbs very fine sandy loam, gently sloping phase, is used chiefly for cotton, corn, and pasture. A small part is used for soybeans and small grains.

This soil is easy to work. It produces good yields, but the erosion hazard is high. All tillage should be done on the contour, and a rotation that includes close-growing crops should be used to control erosion and conserve

portant agricultural soil. The native trees were hardwoods of various kinds.

Profile description:

Surface soil (plow layer)
0 to 6 inches, light brownish-gray friable silt loam; weak fine granular structure.
Subsoil
6 to 26 inches, light yellowish-brown firm silty clay, faintly mottled or splotched with shades of gray and yellow; plastic when wet, and hard when dry; moderate medium blocky structure.
Underlying material
26 to 36 inches, grayish-brown firm silty clay loam, mottled with shades of yellow and brown.

The subsoil ranges in texture from silty clay to sandy clay. The underlying material ranges from silty clay loam to sandy clay loam.

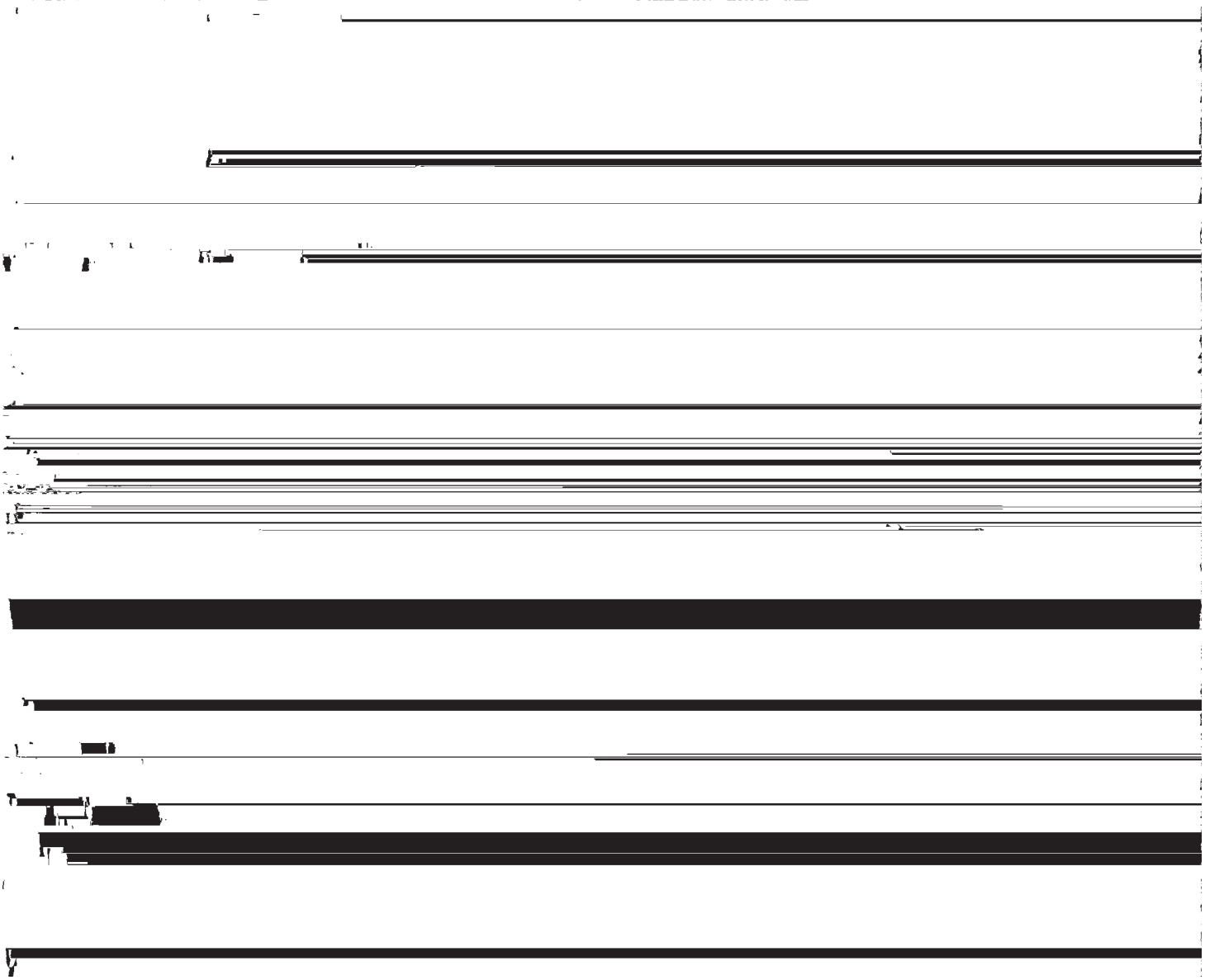
This soil is medium to strongly acid, and it is low in organic matter. Permeability and water-holding capacity are moderate.

Use and suitability (unit I–1).—Practically all of this lying material is grayish-brown firm silty clay loam, mottled with shades of yellow and brown.

This soil is medium to strongly acid. It is low in organic matter, moderate to moderately slow in permeability, and moderate in water-holding capacity.

Mapped with this soil are small gently sloping areas (3 to 7 percent slopes) that are too small to be shown separately on the soil map. These areas would benefit from contour tillage and rotations that include close-growing crops.

Use and suitability (unit IIs–1).—Dundee silty clay, nearly level phase, is used for cotton, soybeans, corn, and pasture. The largest acreage is in cotton. The soil is desirable for crops and pasture but less so than the nearly level phases of Dundee silty clay loam, Dundee silt loam, or Dundee very fine sandy loam. It is fairly easy to work. Because of the silty clay surface soil, fall plowing is necessary in most places where the soil is to be planted to row crops.



Use and suitability (unit IIIe–1).—Dundee silty clay loam, gently sloping phase, is used mostly for cotton, but a small acreage is used for corn, soybeans, and pasture. The slopes are too strong for growing rice. This soil has fair to good workability, but it is erodible. Contour tillage and rotations that include close-growing crops are needed for the control of erosion.

Dundee silty clay loam, sloping phase (7 to 10 percent [illegible]) (Dn).—This soil differs from Dundee silty clay [illegible]

Using close-growing crops in a rotation with row crops and tilling on the contour will help to control erosion.

Dundee-Clack soils, nearly level phases (½ to 3 percent slopes) (Dt).—This soil complex is comprised mainly of Dundee, Dubbs, and Bosket soils, but small areas are made up of Beulah and Clack soils. The surface soils vary considerably in texture, or from silty clay loam to loamy sand. In this complex the soils do not occur [illegible]

Underlying material
24 to 34 inches, light-gray to gray firm silty clay loam, mottled with various shades of yellow and brown; structureless (massive).

This soil is medium to strongly acid. It has a low supply of organic matter, and its permeability is slow.

Areas of Forestdale silt loam, level phase, a soil not mapped separately in the county, are mapped with this soil. These areas were too small to be shown separately on the soil map.

Use and suitability (unit IIs–2).—Almost all of Forestdale silt loam, nearly level phase, is planted to row crops, principally cotton. A small acreage is used for corn, soybeans, rice, and pasture. This soil is easy to work, but artificial drainage may be necessary before it can be completely utilized. Adequate surface drainage usually

Use and suitability (unit IIIe–2).—This soil is not well suited to row crops, but cotton and corn are commonly grown. Soybeans are also an important crop. The soil is suited to pasture, and a small acreage has been established. Small grains can be grown successfully. Although this soil is fairly easy to work, the rather strong slopes make management more difficult than on more nearly level areas. Rows should follow the contour, and rotations that include a close-growing crop should be used. Crops that add humus will greatly improve the tilth of the soil.

Forestdale silty clay, nearly level phase (½ to 3 percent slopes) (Fc).—This soil is similar to Forestdale silty clay loam, nearly level phase. The main difference is in the finer texture of its surface soil. Some small areas are level (0 to ½ percent slopes). The small individual areas

is very fine sandy loam, and the texture of the Dundee soils ranges from silty clay to very fine sandy loam.

These soils occur in a small area about one-half mile southwest of Skene. Although some areas occupy mounds, most of the soils occur at lower elevations. Small drains and depressions form an intricate pattern throughout the areas of these soils. Some small areas mapped with these soils have slopes of 3 to 7 percent.

The native vegetation on these soils was hardwoods of various kinds and a dense growth of vines and canes.

The soils are medium to strongly acid and low in organic matter. Their permeability is slow.

Use and suitability (unit IIs–2).—These soils are used chiefly for cotton, corn, soybeans, and pasture. Their productivity generally is good, and they are fairly easy to work.

Mhoon silt loam (½ to 3 percent slopes) (Ma).—This is a nearly level, somewhat poorly drained to poorly drained soil. It occurs on recent natural levees that border the Mississippi River or lie along former channels of that river. The soil has formed from moderately coarse textured to fine textured Mississippi River alluvium. This soil is associated with Commerce and Robinsonville soils. Its predominant colors are shades of gray, as compared to the shades of brown in the Commerce and Robinsonville soils. The original vegetation was hardwoods of various kinds and a dense growth of vines, canes, and underbrush.

Profile description:

Pearson silt loam, nearly level phase (½ to 3 percent slopes) (Pa).—This moderately well drained soil occurs mostly in areas where Dexter and Brittain soils predominate. The areas occur next to the Jones and Porter Bayous on old natural levees of tributary streams that originate in the loess hills. This soil has formed from silty alluvium derived from the loess hills. It is intermediate in position and drainage between the Dexter and Brittain soils. The native trees were hardwoods of various kinds.

Profile description:

Surface soil (plow layer)
- 0 to 5 inches, very pale brown very friable silt loam; weak fine granular structure.
- 5 to 9 inches, very pale brown very friable silt loam; few, faint, fine mottles of light gray; structureless (massive).
- 9 to 15 inches, yellowish-brown friable silt loam mottled with light gray; weak medium subangular blocky structure.

Subsoil
- 15 to 22 inches, yellowish-brown friable silt loam mottled with light gray; weak medium subangular blocky structure. This layer differs from the foregoing layer chiefly in having slightly darker shades of yellowish brown.
- 22 to 26 inches, dark yellowish-brown friable to firm silty clay loam mottled with light brownish gray; moderate medium subangular blocky structure.

Underlying material
- 26 to 35 inches, grayish-brown friable to firm silty clay loam splotched with dark brown; weak medium subangular blocky structure.
- 35 to 68 inches, yellowish-brown firm silty clay loam; few, faint, fine mottles of light brownish gray; [illegible]

recent natural levees that border the Mississippi River. It is similar to Bosket very fine sandy loam, nearly level phase, that occurs on old natural levees, but unlike that soil it is neutral to alkaline instead of medium to slightly acid. The native trees consisted of hardwoods and a dense growth of vines, underbrush, and canes.

Profile description:

Surface soil (plow layer)
0 to 8 inches, yellowish-brown very friable fine sandy loam; weak fine granular structure.
Subsurface
8 to 14 inches, dark grayish-brown very friable silt loam; structureless (massive).
Underlying material
14 to 36 inches, yellowish-brown very friable fine sandy loam; structureless (single grain).
36 to 40 inches, light yellowish-brown very friable fine sandy loam; structureless (single grain).

This soil is low in organic matter. Its permeability and water-holding capacity are moderate.

Included in this mapping unit are some areas that have a surface soil of very fine sandy loam. In other areas the surface soil is fine sandy loam, but the profiles are shallow. Some small included areas have a surface soil of fine sandy loam but occupy gently sloping relief (3 to 7 percent slopes). Also included is a small acreage of nearly level, [redacted] is usually either too wet or too dry for tillage. Even though the soil is not well suited to them, row crops are the principal crops grown. The soil would be better for pasture, hay, or rice. Soybeans ordinarily make fair yields.

Sharkey clay, level phase (0 to ½ percent slopes) (Sa).—This soil is similar to Sharkey clay, nearly level phase. The principal difference is that it is level and needs more artificial drainage. It occurs in small areas throughout the slack-water flats.

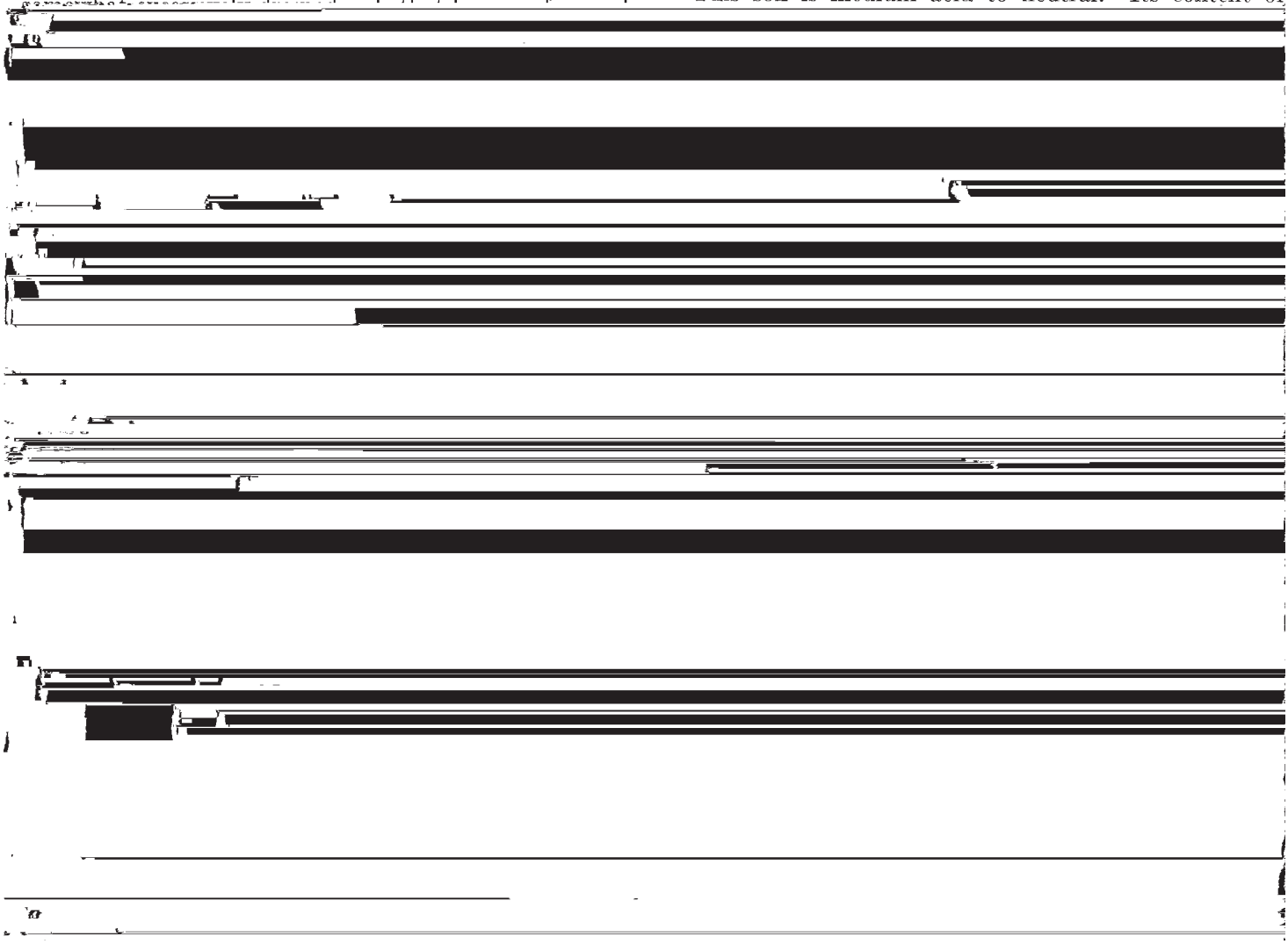
This soil is medium acid to neutral. It has a moderate supply of organic matter and slow permeability.

Use and suitability (unit IVw–2).—This soil is used for corn, small grains, soybeans, cotton, and pasture. It is poorly suited to most row crops but produces fair yields of soybeans. It is well suited to rice and pasture.

This soil is difficult to work. Because it is level and has a high content of clay, artificial drainage is necessary.

Sharkey clay, gently sloping phase (3 to 7 percent slopes) (Sc).—This soil is closely associated with Sharkey clay, nearly level phase. It differs chiefly in having stronger slopes. It occurs in small narrow areas on the slack-water flats. Some of the small included areas are moderately eroded.

This soil is medium acid to neutral. Its content of



clay, nearly level phase. The chief difference is that it is level. The small areas are distributed throughout the slack-water flats.

The native vegetation was bottom-land hardwoods of various kinds and an undergrowth of vines and canes. This soil is medium acid to neutral. It has a moderate supply of organic matter and slow permeability.

Use and suitability (unit IVw–2).—This soil is poorly suited to most row crops, but row crops are grown in some places. Some areas are used for pasture. Because the soil is level and has a fine texture, artificial drainage is necessary before the soil can be used for row crops or pasture. The soil is well suited to rice. Its workability is fair to poor.

Sharkey silty clay, gently sloping phase (3 to 7 percent slopes) (Sg).—This poorly drained soil is closely associated

was derived from sediments deposited by streams. It is similar to Sharkey clay, nearly level phase. It differs in having a considerably thicker, very fine sandy loam surface soil. Below the surface soil, the texture is clay similar to that of the subsurface soil of Sharkey clay, nearly level phase. The small areas of this soil occur mostly at the places where the old natural levees adjoin the slack-water flats.

Profile description:

Surface soil (plow layer)
0 to 6 inches, dark grayish-brown very friable very fine sandy loam; weak fine platy structure.
6 to 9 inches, very dark gray friable very fine sandy loam; common distinct medium yellowish-red mottles; weak fine platy structure.
9 to 12 inches, grayish-brown to dark-gray friable very fine

variable in physical characteristics. This complex is poorly drained to excessively drained. It occurs in long narrow strips next to bayous and other streams.

The soils of this complex are strongly acid to neutral. They vary somewhat in content of organic matter. Permeability is slow to rapid.

Moderate erosion occurs in some small areas. Some included areas that have stronger slopes, and a small included overwash area, are also moderately eroded. The overwash area has a dark-colored friable surface layer of silt loam that is 6 to 12 inches thick. The surface layer is underlain by dark-colored very firm silty clay. These included areas are too small to be shown separately on the soil map.

Use and suitability (unit IIIe–3).—Most of this soil complex is in forest, but some areas are used to grow cotton, corn, and soybeans. The slopes are short and subject to erosion. Tillage therefore should be on the contour, and close-growing crops or sod crops should be grown. The workability of the soils ranges from poor to excellent.

Souva soils (0 to ½ percent slopes) (So).—These level soils are somewhat poorly drained to moderately well drained. They vary somewhat in the color and thickness of their profile layers. They occur mostly at lower elevations in the general area in which Bosket, Dubbs, Robinsonville, Commerce, and Dundee soils predominate. The Souva soils were derived from medium textured to moderately fine textured local alluvium washed mainly from the Bosket, Dubbs, and Dundee soils. They occupy long narrow strips in depressions and in former channels of small streams. Runoff from the surrounding higher soils accumulates on these soils, and they remain wet longer than the adjacent higher lying soils. The native vegetation was bottom-land hardwoods and a dense growth of vines, canes, and underbrush.

Profile description:

Surface soil (plow layer)
0 to 6 inches, grayish-brown friable silty clay loam; weak fine granular structure.
Subsoil

Mississippi River alluvium. It resembles Sharkey clay, nearly level phase, with which it is closely associated. The chief difference is that this soil was formed from thin beds of clay, underlain at depths of 18 to 30 inches or more by moderately fine textured to coarse textured alluvial materials.

This soil occupies narrow strips throughout the slack-water flats. In most places it occurs at slightly higher elevations than the Sharkey soils. Normally, it occurs at slightly lower elevations than the soils on the recent natural levees. It has the best drainage of any soil of the slack-water flats.

Profile description:

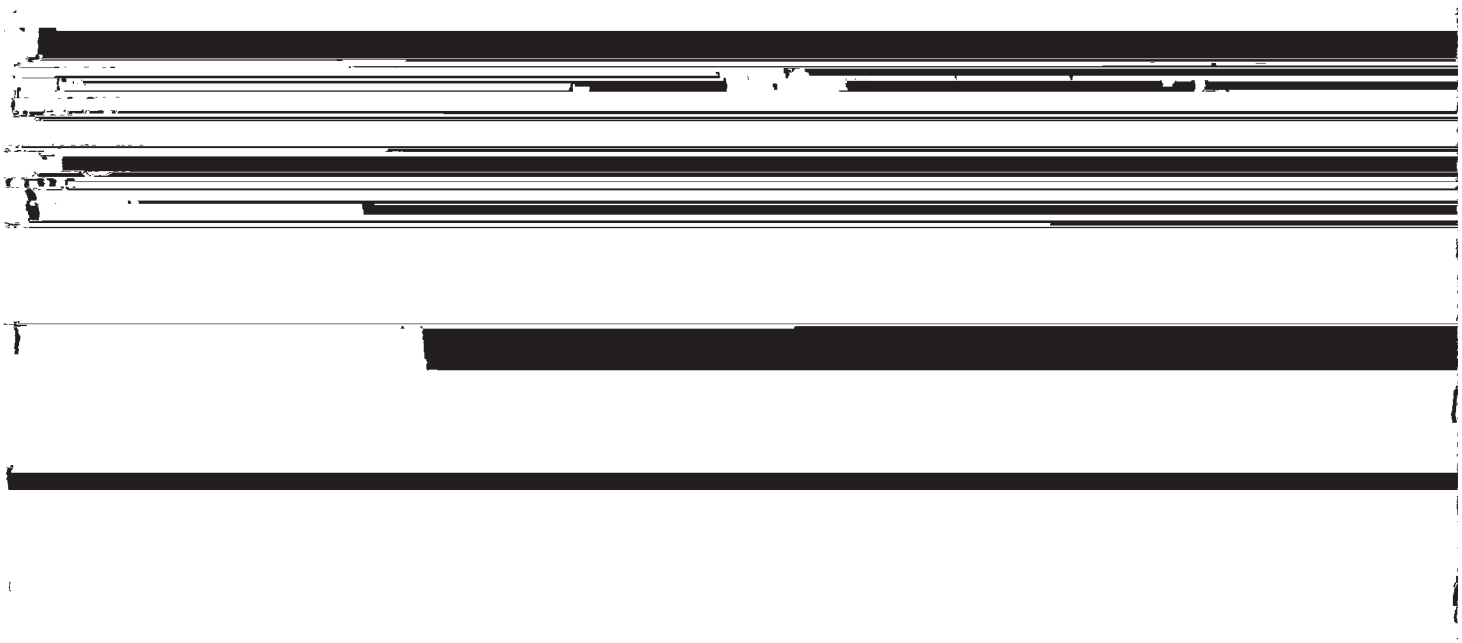
Surface soil (plow layer)
0 to 4 inches, dark grayish-brown firm silty clay; plastic when wet, and hard when dry; moderate medium granular structure.
Subsurface
4 to 18 inches, dark-gray firm clay, faintly mottled with brown and other shades of gray; very plastic when wet, and very hard when dry; weak medium subangular blocky structure.
Underlying material
18 to 30 inches, mottled gray and yellow friable silty clay loam; structureless (massive).
30 inches+, silty or sandy friable alluvial material.

The upper part of the underlying material ranges from silty clay loam to silt loam in texture. In some places it consists of stratified thin beds of sand and clay.

This soil is slightly acid to neutral. It contains a moderate amount of organic matter. Permeability is slow to moderate.

Use and suitability (unit IIs–1).—This soil is used for cotton, corn, and soybeans, but mostly for cotton. It is the most desirable soil of the slack-water flats for most of the commonly grown row crops. It has fair to poor workability.

Tunica silty clay, gently sloping phase (3 to 7 percent slopes) (Tb).—This soil is similar to Tunica silty clay, nearly level phase. It differs chiefly in having stronger slopes. It occurs in narrow strips next to bayous and other streams and on narrow ridges.



channels of streams. It differs in having a considerably higher content of silt. The native trees were hardwoods of various kinds.

Profile description:

Surface soil (plow layer)
0 to 6 inches, pale-brown to grayish-brown friable silt loam, mottled with shades of yellow and other shades of brown; weak fine granular structure; small dark-colored concretions common.

Subsoil
6 to 20 inches, light-gray to grayish-brown friable silty clay loam, mottled with shades of yellow and other shades of brown; structureless (massive).

Underlying material
20 to 24 inches, light-gray friable to firm silty clay, mottled with shades of yellow and red; structureless (massive).

This soil is medium to strongly acid. It contains a moderate supply of organic matter. Permeability is slow.

Included with this soil in mapping are some areas of Dyer silty clay loam, which is not mapped separately in this county. This included soil differs chiefly in having a finer textured surface soil.

Use and suitability (unit IIIw–1).—Waverly silt loam,

or hazards are erosion, indicated by the letter (e) following the class number; excess water, indicated by the letter (w) following the class number; and certain soil conditions, indicated by the letter (s). For example, class II is a broad group in which there are soils subject to moderate limitations, or hazards, but that can be cultivated safely with suitable practices. For some of the soils in class II, erosion is the dominant hazard, and this is indicated by the symbol IIe.

Groups of similar soils within a class and subclass make up capability units, which are indicated by symbols IIe–1, IIe–2, and so on. In the following pages, the capability units of each class are described and their use and management are discussed.

Capability Class I

The soils of capability class I have no serious limitations for use. They are not subject to erosion, serious drought, wetness, or other limitation. They can be cultivated

Capability Class II

Capability class II is a broad grouping of soils that can be cultivated safely with easily applied practices. The soils have some limitations, but these can be overcome by

Capability unit IIs–1

The soils in capability unit IIs–1 are the following:

Commerce silty clay loam.
Commerce silty clay.
Dundee silty clay loam, nearly level phase.

Use and management.—The soils of capability unit IIs–2 are fairly well suited to cotton, corn, soybeans, small grains, and pasture. They are not well suited to deep-rooted perennials. Although the soils are suited to rice, little rice has been grown.

These soils tend to be cold. Nevertheless, if well managed they will produce good yields of most row crops. The soils should be prepared for row crops in the spring. The row crops should be followed by winter legumes. Irrigation can be practiced without serious loss of water.

The addition of nitrogen fertilizer is helpful in obtaining satisfactory yields. Brittain silt loam, nearly level phase, may need potash if cotton is grown.

These soils are well suited to most grass-legume mixtures grown locally. They are fairly well suited to temporary winter grazing, but a good sod should be established before the pasture is grazed. The soils are well suited to pasture. They are well suited to temporary winter grazing but may be too droughty for temporary summer grazing.

Capability unit IIs–4

The soils in capability unit IIs–4 are the following:

Alligator silty clay loam, nearly level phase.
Forestdale silty clay loam, nearly level phase.
Sharkey silty clay loam, nearly level overwash phase.

These nearly level soils have fairly heavy surface soils and heavy suboils. The Alligator and Sharkey soils are on slack-water flats, and the Forestdale soil is on old natural levees. It is difficult to maintain good tilth in these soils. The soils are only fairly easy to work. Their surface runoff and internal drainage are slow, and they are

sericea lespedeza, and alfalfa. Tillage should be on the contour for erosion control, and row crops should be grown only 1 year out of 3. The soils are well suited to permanent pasture, winter grazing, and temporary grazing in corn. If these soils are used for row crops, rotations that include row crops 1 year out of 3 and close-growing crops, legumes, or sod crops, 2 years out of 3 should be used.

Use and management.—Because of their heavy surface soils and subsoils, slow to very slow internal drainage, and rather strong slopes, the soils of capability unit IIIe–3 are not suitable for continuous cultivation. The crops

Capability unit IIIe–2

The following soils are in capability unit IIIe–2:

Capability unit IIIs-2

The soils in capability unit IIIs–2 are the following:

Alligator clay, nearly level phase.
Alligator silty clay, nearly level phase.
Forestdale silty clay, nearly level phase.
Sharkey clay, nearly level phase.
Sharkey silty clay, nearly level phase.
Sharkey-Clack soils, nearly level phases.

The Alligator and Sharkey soils of capability unit IIIs–2 are on slack-water flats, and the Forestdale soil is on old natural levees. The Sharkey-Clack complex occupies small areas that are distributed throughout the slack-water flats, but it mostly occurs at the places where the elevation changes abruptly from that of the old natural levees to that of the slack-water flats. The soils have slopes that range from ½ to 3 percent.

The Alligator and Forestdale soils are medium to strongly acid. They have a moderate supply of organic matter. Sharkey clay, nearly level phase, and Sharkey silty clay, nearly level phase, are generally medium acid to neutral, although in some places Sharkey clay, nearly level phase, is calcareous in the lower part. The supply of organic matter in these two soils is moderate. The soils in the Sharkey-Clack complex are strongly acid to neutral, and their content of organic matter is variable.

The factor limiting the use of most of these soils is the fine-textured surface soil and subsoil. Because of the clayey subsoil, the movement of water through the profile is slow or very slow. The exceptions are in the small areas of Clack soil included in the Sharkey-Clack complex. This soil is loose loamy sand that has very rapid internal drainage.

Use and management.—The soils of capability unit IIIs–2 are well suited to rice, grass, and hay crops. They are not well suited to cotton and corn but are fairly well suited to small grains, soybeans, and lespedeza. When these soils are used for row crops, at least half of the rotation should consist of close-growing crops, such as sod crops, legumes, or both. Crops that produce a heavy yield of litter will improve the soils.

These nearly level soils have slow surface runoff that can be accelerated by using V-ditches, or dragline ditches. Adequate outlets must be provided in the adjacent depressions before the soils can be put to use. It is important that crop rows be run so as to direct excess water to suitable outlets.

Before permanent pastures can be used for grazing in winter, a good sod is necessary to prevent bogging. These soils are not suitable for temporary grazing, but they may be used for temporary summer grazing of such annuals as millet or sweet sudan.

Inasmuch as a large part of the acreage in the county consists of soils of this capability unit, it is important that the soils be used for purposes to which they are well suited. They are best used for permanent pasture or rice. Rice is a new crop on these soils. Most of the soils produce yields of 60 to 70 bushels per acre for the first year.

Capability Class IV

Capability class IV in this county is made up of soils that for the most part are inherently fertile. Nevertheless, because of certain characteristics and the location, the soils cannot be used in a regular cropping system. One of the most needed practices in managing the soils of this capability class is to choose crops carefully. The soils are in capability units IVw–1, IVw–2, IVw–3, and IVs–1.

Capability unit IVw–1

Alluvial soils, a miscellaneous land type, is the only member of capability unit IVw–1. This land type is made up of soils that have excess water as the dominant hazard. These soils occupy the areas between the Mississippi River and its levee. Because they are subject to periodic overflows of long duration, their use for crop production is very uncertain. Most of the soils consist of different phases of the Commerce and Robinsonville series and of smaller areas of different phases of the Mhoon and Crevasse series.

About 75 percent of this land type is not cultivated because of unfavorable relief or the flood hazard. Some of it was disturbed by excavation when the levee was built. Parts of it are used for temporary grazing, but no permanent pastures have been established. Most of this area is in bottom-land hardwoods, but there are scattered stands of willows and cottonwoods.

Some small areas of this land type occur at higher elevations than typical so are not flooded each year. They may not be flooded for several years. Because of the risk of floods, however, these areas are not planted to crops.

Use and management.—The soils of this land type are very productive, and little fertilizer is used on them. They are suited to limited use for row crops, hay, and grazing. Because of the overflows, crops that can be planted late should be grown. Cotton is grown successfully some years but fails completely in other years. Except for those years when overflows prevent it, corn can be successfully grown, as is true for most row crops.

Permanent pastures are not practical on these soils, and in many places they cannot be established. These areas are often used for summer and fall grazing, but generally the cattle must be removed to protected areas by late fall. Some of the areas at higher elevations may be planted for temporary winter grazing, but this is the exception rather than the rule.

On a long-term basis, this land type is best suited to forest. The use of this land for row crops is uncertain, and for grazing its use can be only temporary.

Capability unit IVw–2

The soils in capability unit IVw–2 are the following:

Alligator clay, level phase.
Alligator silty clay, level phase.
Sharkey clay, level phase.
Sharkey silty clay, level phase.

The level soils of capability unit IVw–2 (0 to ½ percent slopes) are on slack-water flats. These soils are poorly drained. The Alligator soils are medium to strongly acid, and the Sharkey soils are medium acid to neutral. All the soils have a moderate supply of organic matter. Their fine-textured, clayey nature makes management difficult and limits their suitability for use.

Use and management.—The soils of capability unit IVw–2 are well suited to rice. They are fairly well suited to soybeans if proper drainage is provided but are poorly suited to cotton, corn, and small grains.

If these soils are to be used for row crops, a good cropping system would be 2 years of row crops followed by 4 years of sod crops. Because of their poor drainage, an extensive drainage system is necessary before the soils can be used for row crops. Less drainage is needed if they are used for pasture. Permanent pasture is a good use for these soils. The soils are well suited to fescue and Ladino clover and slightly less suited to Dallisgrass and lespedeza.

The soils can be used for summer annuals such as millet and sweet sudan. Temporary winter grazing is not a good use. These soils are well suited to forest, and some areas are used for that purpose.

Capability unit IVw–3

Dowling clay is the only soil in capability unit IVw–3. This unit [illegible] to ¼ percent slopes) occupies depressions on

usually difficult to obtain in the fall. The soils are not suited to cotton, corn, and soybeans. The use of perennial legumes or sod crops three-fourths of the time will increase their very low supply of organic matter. Nitrogen fertilizer, if used, may leach rapidly below the reach of plant roots.

Deep-rooted perennial grasses are considered the best suited grasses for these soils. Kudzu and sericea lespedeza will grow satisfactorily, but it is difficult to establish them on these droughty soils. Permanent pasture, with limited grazing, is considered the best use for these soils.

Estimated Yields

The estimated average yields of various crops on each of the Bolivar County soils under two levels of management are listed in table 6. In columns A are given

TABLE 6.—*Estimated average acre yields of principal crops under two levels of management*

[Yields in columns A are those obtained under common management practices; yields in columns B are those obtained under good

Soil	Cotton (lint)		Corn (hybrid)		Oats		Rice		Soybeans		Pasture	Capability unit
	A	B	A	B	A	B	A	B	A	B	B	
	Lb.	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Cow-acre-days* [1]	
Alligator clay:												
Nearly level phase	300	375	25	65	50	60	60	70	15	25	145	IIIs-2.
Level phase	300	375	25	65	50	60	60	70	15	25	145	IVw-2.
Gently sloping phase	300	375	25	65	50	60	60	70	15	25	145	IIIe-3.
Alligator silty clay:												
Nearly level phase	300	375	25	65	50	60	60	70	15	25	145	IIIs-2.
Level phase	300	375	25	65	50	60	60	70	15	25	145	IVw-2.
Gently sloping phase	300	375	25	65	50	60	60	70	15	25	145	IIIe-3.
Alligator silty clay loam, nearly level												

TABLE 6.—*Estimated average acre yields of principal crops under two levels of management*—Continued

[Yields in columns A are those obtained under common management practices; yields in columns B are those obtained under good management. Lack of information indicates crop is poorly suited at the management level indicated. Pasture is rated for only the

Soil	Cotton (lint)		Corn (hybrid)		Oats		Rice		Soybeans		Pasture	Capability unit
	A	B	A	B	A	B	A	B	A	B	B	
	Lb.	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Cow-acre-days* [1]	
Sharkey silty clay:												
Nearly level phase	300	375	25	65	50	60	60	70	15	25	145	IIIs–2.
Level phase	300	375	25	65	50	60	60	70	15	25	145	IVw–2.
Gently sloping phase	300	375	25	65	50	60	60	70	15	25	145	IIIe–3.
Sharkey silty clay loam, nearly level overwash phase	350	450	25	65	50	65	60	70	15	25	130	IIs–4.
Sharkey very fine sandy loam, nearly level overwash phase	500	525	50	80	50	65	60	70	15	25	140	IIs–2.
Sharkey-Clack soils:												
Nearly level phases	210	265	20	45	35	40	40	50	10	20	100	IIIs–2.
Gently sloping phases	210	265	20	45	35	40	40	50	10	20	100	IIIe–3.
Souva soils	350	500	30	90	20	30	------	------	15	25	100	IIw–1.
Tunica silty clay:												
Nearly level phase	500	550	30	70	50	60	------	------	15	30	160	IIs–1.
Gently sloping phase	500	550	30	70	50	60	------	------	15	30	160	IIIe–1.
Waverly silt loam, local alluvium phase	------	------	10	30	------	------	------	------	10	15	90	IIIw–1.

[1] Cow-acre-days is a term used to express the carrying capacity of pasture. It is the number of days a year that 1 animal unit can be supported on 1 acre without injury to the pasture. An animal unit is the equivalent of 1 mature cow, steer, or horse; 5 hogs; or 7 sheep or goats.

These figures are estimates only, based on the best information available. Yields may be above or below the figures listed in the table. The yields should be used only as a guide in the preparation of farm plans or in appraisals. Results from 1 year's crop can be misleading; therefore, the figures were based on information received over a period of years. A favorable or unfavorable season, the past treatment of a soil, the type of crop, the

if the parent material of the soil is quartz sand, the soil generally has only weakly developed horizons. Even in quartz sand, however, distinct profiles can be formed under certain types of vegetation where the topography is low and level and the water table is high. As a rule, however, more than 1 of the 5 factors influence the development of the soil.

When the first settlers arrived, they found that dense forests, broken by occasional canebrakes, covered the area. Heavy stands of cypress grew in the swampy areas, and hardwoods occupied most of the better drained soils and many of the wet ones. On the low ridges the trees were principally hickory, pecan, post oak, blackgum, and winged-elm. In the swales and low places that were wet, but not swampy, the principal trees were tupelo-gum, sweetgum, soft elm, green ash, hackberry, cottonwood, overcup oak, and willow oak. Canebrakes covered many of the broader flats in the sloughs and bayous between the swamps.

The differences in native vegetation apparently were caused largely by differences in drainage. Only the major differences in the original vegetation have been reflected in the soils to any extent, however, probably because the soils are so young.

Man has had his effect upon the vegetation. He has cleared the forests, cultivated the soils, introduced new species of plants, built levees for flood protection, and improved drainage. All of these will influence the future development of the soils. Few results of these changes can as yet be seen, and some may not be evident for many centuries.

Parent materials

Most of the soils of Bolivar County were derived from alluvial sediments laid down by the Mississippi River. A small acreage originated from alluvial sediments carried by tributary streams from the loess hills, which are about 25 miles to the east. The thickness of the alluvium in this county ranges from many tens to several hundreds of feet.

The alluvium along the lower Mississippi River, including this county, came from many different soils, rocks, and unconsolidated sediments that originated in some 20 States. As a result it consists of a mixture of mineral materials, many of which are comparatively fresh and but slightly weathered. Sedimentary rocks are the most extensive of the rocks in the upper basin, which extends from Montana to Pennsylvania, but other kinds of rock are also exposed and serve as sources of sediment in many places. Large areas in the upper basin have a mantle of recent glacial drift and loess.

Within the county the texture varies greatly because of differences in deposition. All of the material was laid down by river waters either when the river was quiet or in flood. As the river overflowed its channel and the water spread out over the flood plain, the coarser sediments were dropped first. Sands were commonly deposited in bands parallel to and near the channel. Low ridges thus formed are known as natural levees and forth across much of the flood plain, sometimes cutting out natural levees laid down earlier, sometimes depositing sand on top of slack-water clays or vice versa. The original pattern in which the sediments were distributed from a single channel has become partly or wholly truncated in many places. In many places subsequent beds of alluvium have covered the original pattern.

Many combinations of sediments resulting from the superimposing of the simple patterns are now present in the flood plain. In many places there are fragments of former channels with their adjacent sandy natural levees, very gently sloping areas of medium-textured sediments, and slack-water clays. On the whole, the large areas of slack-water clays have been stable, partly because they lie farthest from the meander belt established by the river channel in the central part of the broad flood plain.

Textural differences in the alluvium are accompanied by some differences in the chemical and mineralogical composition of the soils. The sandier sediments generally contain more quartz than sediments of intermediate or fine textures. Conversely, they contain less feldspar and ferromagnesian minerals. The sandier sediments are characteristically more siliceous and lower in bases. For the most part, they are also lower in carbonates. Some of the more recently deposited sandier levees are distinctly calcareous, whereas many of the slack-water sediments are free of carbonates and are slightly acid.

Topography

Bolivar County is a small part of a large nearly level flood plain. The topography ranges from level in the flat areas of slack-water clays to very gently undulating in the successions of ridges and swales that once bordered the river channel.

Local differences in elevation in the county are commonly measurable in feet. Seldom are there differences as great as 15 feet within 1 square mile. In some of the lowest and flattest parts of the flood plain, elevation varies less than 5 feet in as many square miles. Slopes are generally less than 3 percent. Stronger slopes of as much as 10 percent occur on a few streambanks and on the present natural levees of the Mississippi River. The total area in which slopes are strong in the county is negligible. The prevailing elevation above sea level is between 100 and 165 feet.

The level relief in the county contributes to the slow drainage of many of the soils. Water moves into the main channels with difficulty, especially from the areas of slack-water clays. Movement of water through the slack-water clays is also slow, which tends to accentuate drainage problems. A much larger part of the county would probably have been wet and swampy if in the past

which was moving into the area that is now the North Central States about 11,000 years ago (*1*).

The soils that are forming on glacial drift of the Mankato stage (the last of the Wisconsin glaciers) in the

the profile is itself slow. Leaching has also made little progress in the removal of carbonates from soils forming on the most recent sediments near the channel of the Mississippi River. Carbonates and other salts have been

profile horizons of each series are given in table 7. The degree of profile development may be considered as indicating the factor of time in soil development.

of the Mississippi River and smaller streams on the flood plain.

The Beulah soil is closely associated with soils of the Bosket series. It differs from them chiefly in having a

development. These soils have formed on stratified beds of moderately coarse to fine textured Mississippi River alluvium. They occur on old natural levees that border former channels of the Mississippi River and along smaller streams on the flood plain.

The Dubbs soils are better drained than the Dundee and Forestdale soils of the old natural levees. Unlike the Dundee soils, they are free of mottling. They occur at slightly higher elevations than the Dundee soils and generally have better natural drainage. The soils differ from the Forestdale soils in having shades of brown as the predominant color. They also occur at higher elevations and have better natural drainage than the Forestdale soils. The soils are slightly to strongly acid. In some areas they intergrade to the Alluvial great soil group.

A description of Dubbs very fine sandy loam, nearly level phase, follows:

A_p 0 to 8 inches, grayish-brown (10YR 5/2) friable very fine sandy loam; weak fine granular structure.
B_1 8 to 20 inches, yellowish-brown (10YR 5/4) firm silty clay loam; weak medium blocky structure.
B_2 20 to 36 inches, dark yellowish-brown (10YR 4/4) friable fine sandy loam; weak medium subangular blocky structure.
D 36 to 50 inches, yellowish-brown (10YR 5/8) very friable loamy sand.

DUNDEE SERIES

The Dundee soils are somewhat poorly drained to moderately well drained. They have formed on stratified beds of moderately coarse textured to fine textured Mississippi River alluvium. These soils occur on old natural levees that border former channels of the Mississippi River and small streams on the flood plain. They are intermediate in drainage between the Dubbs and Forestdale soils of the old natural levees. The Dundee soils are medium acid to strongly acid. They are intergrades to the Prairie soils, but in some areas they are considered intergrades to soils of the Low-Humic Gley great soil group.

A profile of Dundee silt loam, nearly level phase, follows:

A_p 0 to 6 inches, light brownish-gray (10YR 6/2) friable silt loam; weak fine granular structure.
B_2 6 to 26 inches, light yellowish-brown (10YR 6/4) firm silty clay; faint medium mottles or splotches of shades of gray and yellow common; plastic when wet, and hard when dry; moderate medium blocky structure.
D 26 to 36 inches, grayish-brown (10YR 5/2) firm silty clay loam; distinct medium mottles of shades of yellow and brown are common.

PEARSON SERIES

The soils of the Pearson series have formed from silty alluvium that washed from the loess hills. They occur on old natural levees. In color, texture, and chemical analysis, these soils differ greatly from the soils on old natural levees that have developed from general alluvium deposited by the Mississippi River.

These soils are intermediate in drainage between those of the Brittain and Dexter series that have developed from silty alluvium on old natural levees. They are browner throughout than the Brittain soil. They occur at slightly higher elevations and have better natural drainage. They are lighter colored throughout than the Dexter soils, occur at slightly lower elevations, and are more poorly drained.

The Pearson soils differ from the Dundee soils in having a more uniform color, weaker contrast between profile horizons, and more silt throughout the profile. They are strongly to slightly acid. In profile development they grade toward soils of the Low-Humic Gley great soil group.

The following is a description of Pearson silt loam, nearly level phase:

A_p 0 to 5 inches, very pale brown (10YR 7/3) very friable silt loam; weak fine granular structure.
A_2 5 to 9 inches, very pale brown (10YR 7/3) very friable silt loam; a few, faint, fine, light-gray (10YR 7/2) mottles; structureless (massive).
A_3 9 to 15 inches, yellowish-brown (10YR 5/6) friable silt loam mottled with light gray (10YR 7/2); weak medium subangular blocky structure.
B_1 15 to 22 inches, yellowish-brown (10YR 5/4) friable silt loam mottled with light gray (10YR 7/2); weak medium subangular blocky structure.
B_2 22 to 26 inches, dark yellowish-brown (10YR 4/4) friable to firm silty clay loam mottled with light brownish gray (10YR 6/2); moderate medium subangular blocky structure.
D_1 26 to 35 inches, grayish-brown (10YR 5/2) friable to firm silty clay loam splotched with dark brown (10YR 4/3); weak medium subangular blocky structure.
D_2 35 to 50 inches, grayish-brown (10YR 5/2) firm silty clay loam mottled with yellowish brown (10YR 5/4) and light grayish brown (10YR 6/2); weak medium subangular blocky structure.
D_3 50 to 68 inches, yellowish-brown (10YR 5/4) firm silty clay; a few, faint, fine, light brownish-gray (10YR 6/2) mottles; weak medium subangular blocky structure.
D_4 68 inches +, brown (10YR 5/3) friable very fine sandy loam; a few, faint, fine, gray (10YR 5/1) mottles; structureless (single grain).

Low-Humic Gley soils

The Low-Humic Gley great soil group consists of imperfectly to poorly drained soils that have very thin surface horizons moderately high in organic matter. These overlie mottled gray and brown gleylike mineral horizons (*9*). Gleying has been the process important in their development.

In this county the Low-Humic Gley soils include members of the following series:

Alligator.
Brittain.
Dowling.
Forestdale.
Mhoon.
Souva.
Waverly.

Except for the Souva soils, all these soils are either poorly drained or somewhat poorly drained. The Souva soils in this county are moderately well drained to somewhat poorly drained.

None of the soils appear to have distinct horizons, although they show the effects of gleying and accumulation of organic matter in their morphology. These soils either are members of or are closely related to hydromorphic groups. The absence of a thick A_1 horizon high in organic matter is used as a basis for excluding these series from the Humic Gley group (*8*). The soils therefore seem more appropriately classified as Low-Humic Gley soils.

The Sharkey soils were once considered members of the Low-Humic Gley great soil group. The soils exhibit properties of churning through shrinking, swelling, and cracking. They are therefore tentatively classified as Grumusols (*5*).

Recognition of the Low-Humic Gley group was proposed initially for somewhat poorly drained to poorly drained soils that lack prominent A_1 horizons but that have strongly gleyed B and C horizons with little textural differentiation. The recognition of two great soil groups for the Low-Humic Gley and Humic Gley (Wiesenboden) soils was based on the thickness of the A horizon and on the content of organic matter.

The Humic Gley soils are high in organic matter, whereas the Low-Humic Gley soils are moderate to low. The Alligator, Dowling, and Forestdale, and other soils of this group are not high in organic matter, and they show effects of gleying in their morphology. Beyond that, there is less evidence of cracking and churning in these soils than in Sharkey clay. On the basis of present knowledge, classification of the seven series as Low-Humic Gley soils seems appropriate. Further studies may indicate that the Alligator and Dowling soils are intergrades to the Grumusols because both are closely related to the Sharkey soils.

ALLIGATOR SERIES

The Alligator series consists of clayey soils formed from fine-textured Mississippi River alluvium. These poorly drained soils are closely associated with the Sharkey and Tunica soils, which they resemble in many ways. The Alligator and Sharkey soils generally occupy large areas on the slack-water flats. The Alligator soils are lighter colored and more acid than the Sharkey soils, and their structure is not so well developed.

The Alligator soils are generally gray (10YR 5/1 or 6/1) or light brownish gray (10YR 6/2). In contrast the Sharkey soils in most places are dark grayish brown (10YR 4/2) or very dark gray (10YR 3/1). The Alligator soils differ from the Forestdale soils mainly in that their profiles are heavy clay or silty clay throughout, whereas those of the Forestdale soils are silty clay loam in the lower part. The Alligator soils are medium to strongly acid.

A profile of Alligator clay, nearly level phase, follows:

A_{pg} 0 to 6 inches, light brownish-gray (10YR 6/2) firm clay; very plastic when wet, and very hard when dry; weak fine to medium granular structure.

G_1 6 to 24 inches, gray (10YR 5/1) firm to very firm clay mottled with yellowish brown (10YR 5/6); very plastic when wet, and very hard when dry; structureless (massive).

G_2 24 to 36 inches, light-gray (10YR 6/1) firm to very firm clay mottled with various shades of gray, brown, and yellow; structureless (massive).

BRITTAIN SERIES

Brittain silt loam, nearly level phase, the only soil of this series mapped in this county, is somewhat poorly drained. It has formed on old natural levees from silty alluvium derived from the loess hills. It occurs at lower elevations next to the Jones and Porter Bayous. In most places a narrow area of either Dexter or Pearson soils lies between the bayous and the Brittain soil.

This soil is grayer throughout than the Dexter and Pearson soils with which it is associated. It is more poorly drained and generally occurs at lower elevations than the Dexter and Pearson soils. This soil has a higher content of silt in the surface soil and subsoil than the Forestdale soils. It is medium to slightly acid. In characteristics it grades towards soils of the Gray-Brown Podzolic great soil group.

A profile of Brittain silt loam, nearly level phase, follows:

A_p 0 to 4 inches, dark grayish-brown (10YR 4/2) very friable silt loam; weak fine granular structure.

B_g 4 to 10 inches, gray to grayish-brown (10YR 5/1 or 5/2) friable silt loam, mottled with shades of brown and yellow; structureless (massive).

D_G 10 to 40 inches, gray (10YR 5/1) to light-gray (10YR 7/1) friable silty clay loam mottled with shades of yellow and brown; weak medium to coarse subangular blocky structure.

DOWLING SERIES

The soils of the Dowling series are poorly drained. They were formed from fine-textured Mississippi River alluvium. These soils occupy depressions or old bayous or stream meanders. They form a natural drainage pattern for the areas in which they occur. Because they receive runoff from the surrounding slopes, they remain wet longer than most of the soils and are usually covered by water during part of the year. They commonly occur in areas where the Alligator, Forestdale, Mhoon, Sharkey, and Tunica soils predominate. The soils are slightly acid to neutral.

A profile of Dowling clay follows:

A_{pg} 0 to 4 inches, dark-gray (10YR 4/1) firm clay; plastic when wet, and hard when dry; weak medium to fine granular structure. In some places this horizon may be stained almost black with organic matter.

G_1 4 to 24 inches, gray (10YR 5/1) firm clay faintly mottled with shades of brown; plastic when wet, and very hard when dry; structureless (massive).

G_2 24 to 40 inches, gray (10YR 5/1) firm clay faintly mottled with various shades of brown; very plastic when wet, and very hard when dry; structureless (massive).

FORESTDALE SERIES

The soils of the Forestdale series are somewhat poorly drained to poorly drained. Their profiles are weakly developed. These soils have formed from stratified moderately coarse textured, medium textured, and fine textured Mississippi River alluvium. They occupy old natural levees that border former channels of the Mississippi River, small bayous, and other streams. The Forestdale soils have a grayer color throughout than the Dundee soils. In most places they are more poorly drained and occur at lower elevations. They are medium to strongly acid.

A profile of Forestdale silt loam, nearly level phase, follows:

A_{pg} 0 to 6 inches, light brownish-gray (10YR 6/2) friable silt loam; weak fine granular structure.

B_g 6 to 24 inches, grayish-brown (10YR 5/2) firm silty clay mottled with shades of gray and brown; very plastic when wet, and hard when dry; weak medium blocky structure.

D_g 24 to 34 inches, light-gray to gray (10YR 7/1 or 6/1) firm silty clay loam mottled with various shades of yellow and brown; structureless (massive).

MHOON SERIES

Mhoon silt loam, the only soil of this series mapped in Bolivar County, has formed from moderately coarse textured to fine textured Mississippi River alluvium. It occupies small areas on recent natural levees that lie along the river or along former channels of the river. The soil is more poorly drained than the other soils on recent natural levees. It is neutral to alkaline in reaction. In profile development it grades toward soils of the Alluvial great soil group.

A profile of Mhoon silt loam follows:

A_p 0 to 6 inches, pale-brown (10YR 6/3) friable silt loam; weak fine granular structure.

C_{g1} 6 to 14 inches, light-gray (10YR 7/2) friable silt loam mottled with shades of yellow and other shades of gray; weak fine granular structure.

C_{g2} 14 to 24 inches, light-gray (10YR 7/1) friable silty clay loam mottled with brown and other shades of gray; structureless (massive).

C_{g3} 24 to 36 inches, mottled gray (10YR 6/1), yellow (10YR 7/6), and brown (10YR 5/3) firm silty clay loam; structureless (massive).

SOUVA SERIES

The soils of the Souva series are moderately well drained to somewhat poorly drained. They occur in depressions and abandoned stream channels on the Mississippi River flood plain. They were derived, in large part, from local alluvium washed from the Bosket, Dubbs, and Dundee soils. In the upper part of the profile the soils are medium acid to neutral; in the lower part, [illegible] The Souva soils

ones. Thus, the soils are being churned or mixed continually, a process that partially offsets horizon differentiation.

Grumusols may have prominent A_1 horizons but lack B horizons. They have dull colors of low chroma, as a rule, and are not well drained. Sharkey clay has many of the features common to Grumusols. The profile has a clay texture throughout, and the clay is dominantly montmorillonitic. The dark A_1 horizon, plus evidence of gleying in the deeper horizons, suggests placement of the series in the Humic Gley group. Laboratory analyses, however, indicate that the content of organic matter in the A_1 horizon of Sharkey clay is appreciably lower than that normal to Humic Gley soils and more nearly comparable to that of typical Grumusols. Furthermore, the dark A_1 horizon is also common to many Grumusols. Consequently, Sharkey clay is tentatively classified as a Grumusol, which intergrades to the Low-Humic Gley group. Sharkey clay seems more poorly drained than is typical of Grumusols, but it is not too wet for operation

composed of silty clay loam or very fine sandy loam that overlies the Sharkey profile. Areas covered by this overwash are not extensive but are scattered throughout the outer fringes of the slack-water flats. Small balls and thin layers of Permian redbed material occur in these soils in a small area near Scott.

A profile of Sharkey clay, nearly level phase, follows:

A_{pg} 0 to 6 inches, very dark grayish-brown (10YR 3/2) firm clay; plastic when wet, and hard when dry; moderate fine granular structure.

C_g 6 to 48 inches, very dark gray (10YR 3/1) very firm clay mottled with brown and other shades of gray; very plastic when wet, and hard when dry; structureless (massive).

Alluvial soils

Alluvial soils are an azonal group of soils that developed from transported and recently deposited materials (alluvium). They are characterized by a weak modification (or none) of the original material by soil-forming processes (*9*).

Soils of this great soil group are described as lacking distinct horizons because the sediments in which they are developing are so young. Given more time under natural conditions, most of these soils would eventually have had profiles similar to those of the Bosket, Dubbs, and Dundee series. Whether that will now occur in soils under cultivation remains to be seen.

The regime in which these soils now exist differs greatly from that of their original natural environment. Some of the processes important in horizon differentiation probably will be accentuated and others subdued. Some may progress more rapidly and others more slowly. The net effect of the change in environment on future development of the soils cannot be forecast as yet with any certainty and may not be apparent for some centuries.

In Bolivar County the Alluvial great soil group includes members of the following series:

Clack.
Commerce.
Crevasse.
Robinsonville.
Tunica.

CLACK SERIES

The Clack series consists of excessively drained soils formed from coarse-textured Mississippi River alluvium. These soils occur on old natural levees that border former channels of the Mississippi River and small streams on the flood plain. They are closely associated with the Beulah, Bosket, Dubbs, and Dundee soils. They have formed from coarser textured sediments than the associated soils, and in contrast to those soils, they have little, if any, profile development. Except that the Clack soils are medium to strongly acid instead of neutral to alkaline, they closely resemble the Crevasse soils.

A profile of Clack loamy sand, nearly level phase, is as follows:

A 0 to 2 inches, very dark grayish-brown (10YR 3/2) loose loamy sand, stained with organic matter; structureless (single grain).

C_1 2 to 6 inches, grayish-brown (10YR 5/2) loose loamy sand stained slightly with organic matter; structureless (single grain).

C_2 6 to 14 inches, grayish-brown (10YR 5/2) loose loamy sand grading into light brownish-gray (10YR 6/2) loose loamy sand; structureless (single grain).

C_3 14 to 36 inches, grayish-brown (10YR 5/2) loose loamy sand; structureless (single grain).

COMMERCE SERIES

The soils of the Commerce series are moderately well drained to somewhat poorly drained. They have formed from fine textured to moderately coarse textured Mississippi River alluvium. They occupy small areas on recent natural levees that lie in narrow belts next to the river or next to abandoned cutoffs or channels. They are intermediate in drainage between the Mhoon and Robinsonville soils. Their reaction is neutral to alkaline. In profile development the Commerce soils grade toward soils of the Low-Humic Gley great soil group.

A profile of Commerce silt loam follows:

A_p 0 to 6 inches, grayish-brown (10YR 5/2) very friable silt loam; weak fine granular structure.

C_1 6 to 22 inches, light brownish-gray (10YR 6/2) to grayish-brown (10YR 5/2) friable silt loam faintly mottled with shades of yellow and brown; weak medium granular structure.

C_2 22 to 40 inches, light brownish-gray (10YR 6/2) friable silt loam mottled with shades of yellow and brown; structureless (massive).

CREVASSE SERIES

The Crevasse series consists of excessively drained soils formed from coarse-textured Mississippi River alluvium. These soils occur near the river or near recent channels or cutoffs. Like the Clack soils they are very sandy. They occur on recent natural levees, however, rather than on old natural levees, and are neutral to alkaline rather than medium to strongly acid. In addition to the typical Crevasse loamy sand mapped in this county, a shallow variant is mapped.

A profile of Crevasse loamy sand follows:

A_p 0 to 10 inches, yellowish-brown (10YR 5/4) very friable loamy sand; structureless (single grain).

C 10 to 42 inches, yellowish-brown (10YR 5/8 grading to 5/6) very friable loamy sand; structureless (single grain).

D 42 inches +, thick bed of coarse sand or loamy sand deposited by the Mississippi River.

A profile of Crevasse loamy sand, shallow variant, follows:

A_p 0 to 6 inches, grayish-brown (10YR 5/2) loose loamy sand stained with organic matter; contains many roots; in some places the upper 2 inches very dark grayish brown (10YR 3/2) and stained with organic matter.

C_1 6 to 9 inches, grayish-brown (10YR 5/2) loose loamy sand; some organic-matter stains and a few roots.

C_2 9 to 14 inches, light brownish-gray (10YR 6/2) loose loamy sand; some of the sand grains coated with organic matter.

C_3 14 to 25 inches, light-gray (10YR 7/2) loose loamy sand; specks of organic matter and a few roots.

D_1 25 to 30 inches, dark-gray (10YR 4/1) firm silty clay; yellowish-red (5YR 5/6) distinct medium mottles common; weak medium subangular blocky structure; a few roots; some sand.

D_2 30 to 36 inches, dark-gray (10YR 4/1) very firm clay; yellowish-red (5YR 4/6) distinct medium mottles common; weak medium subangular blocky structure; few roots; some sandy material in old root channels.

ROBINSONVILLE SERIES

Only one soil of the Robinsonville series, Robinsonville fine sandy loam, is mapped in this county. This soil has formed from moderately coarse textured and medium textured Mississippi River alluvium. It is on recent natural levees that occur in narrow belts next to the Mississippi River or along recent cutoffs or channels of

the river. This soil is well drained. It has better natural drainage than the Commerce and Mhoon soils, which also occur on recent natural levees. It is neutral to alkaline in reaction.

A profile of Robinsonville fine sandy loam follows:

A_p 0 to 8 inches, yellowish-brown (10YR 5/4) very friable fine sandy loam; weak fine granular structure.
C_1 8 to 14 inches, dark grayish-brown (10YR 4/2) very friable silt loam; structureless (massive).
D_1 14 to 36 inches, yellowish-brown (10YR 5/4) very friable fine sandy loam very faintly discolored; structureless (single grain).
D_2 36 to 40 inches, light yellowish-brown (10YR 6/4) very friable fine sandy loam; structureless (single grain).

TUNICA SERIES

The soils of the Tunica series are somewhat poorly drained. They have formed from fine textured to moderately fine textured Mississippi River alluvium. The soils resemble the Sharkey soils, with which they are closely associated. Unlike the Sharkey soils, they have developed from thin beds of clay that are underlain, at depths of 20 to 30 inches, by medium-textured to coarse-textured material. They also are better drained than the Sharkey soils. The Tunica soils occupy narrow areas throughout the slack-water flats. They are slightly acid to neutral in reaction.

A profile of Tunica silty clay, nearly level phase, follows:

A_p 0 to 4 inches, dark grayish-brown (10YR 4/2) firm silty clay; plastic when wet, and hard when dry; moderate medium granular structure.
C 4 to 18 inches, dark-gray (10YR 4/1) firm clay faintly mottled with brown and other shades of gray; very plastic when wet, and very hard when dry; weak medium subangular blocky structure.
D 18 to 30 inches, mottled gray and yellow friable silty clay loam; structureless (massive). This layer ranges from silty clay loam to silt loam and in places consists of interstratified thin beds of sand and clay.
D_2 30 inches+, silty or sandy friable alluvial material.

Glossary

Acidity. The degree of acidity of the soil expressed in pH values, or in words, as follows (*10*):

	pH
Extremely acid	below 4.5
Very strongly acid	4.5–5.0
Strongly acid	5.1–5.5
Medium acid	5.6–6.0
Slightly acid	6.1–6.5
Neutral	6.6–7.3
Mildly alkaline	7.4–7.8
Moderately alkaline	7.9–8.4
Strongly alkaline	8.5–9.0
Very strongly alkaline	9.1 and higher

Alluvium. Sand, silt, or clay deposited on land by streams.

Clay. The small mineral soil grains, less than 0.002 mm. (0.000079 in.) in diameter. (Formerly included the grains less than 0.005 mm. in diameter.)

Complex. A soil association composed of such an intimate mixture of areas of soil series, types, or phases that these cannot be indicated separately upon maps of the scale used and are therefore mapped as a unit.

Consistence. The attributes of soil material expressed by the degree of cohesion and adhesion or by resistance to forces tending to change the form or break the mass. The relative mutual attraction of the particles in the whole mass, or their resistance to separation. Terms used in the report to describe consistence are *firm, friable, hard, loose, plastic, slightly hard, very firm, very friable, very hard,* and *very plastic.*

Firm. Crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
Friable. Crushes easily under gentle to moderate pressure between thumb and forefinger and coheres when pressed together.
Hard. Moderately resistant to pressure; can be broken in the hands without difficulty but is barely breakable between thumb and forefinger.
Loose. Noncoherent.
Plastic. Rolls into wirelike form; moderate pressure required to change form; puttylike.
Slightly hard. Weakly resistant to pressure; easily broken between thumb and forefinger.
Very firm. Crushes under strong pressure; barely crushable between thumb and forefinger.
Very friable. Crushes under very gentle pressure but coheres when pressed together.
Very hard. Very resistant to pressure; can be broken in the hands only with difficulty; not breakable between thumb and forefinger.
Very plastic. Rolls into wirelike form but much pressure required to change the form.

Contour tillage. Furrow plowed at right angles to the direction of slope, at the same level throughout, and ordinarily at comparatively close intervals.

Cropland. Land regularly used for crops, except forest crops. It includes rotation pasture, cultivated summer fallow, or other land ordinarily used for crops but temporarily idle.

Erosion, soil. The wearing away or removal of soil material by water or wind.

Family, soil. A taxonomic group of soils that have similar profiles and are composed of one or more distinct soil series. A category in soil classification between series and great soil groups.

Fertility, soil. The inherent qualities that enable a soil to sustain plant growth.

Forest. (1) Land not in farms that bears a stand of trees of any age or stature. These include seedlings (reproduction) but are of species that attain a minimum average height of 6 feet at maturity. (2) Land from which such a stand has been removed, but is not now restocking, and on which no other use has been substituted. Forest on farms is called farm woodland.

Genesis. Mode of origin of the soil, referring particularly to the processes responsible for the development of the solum (horizons A and B) from the unconsolidated parent material. (*See also* Horizon, soil.)

Granular. Roughly spherical aggregates that may be either hard or soft, usually more firm than crumb and without the distinct faces of blocky structure. (*See also* Structure, soil.)

Great soil group (soil classification). A broad group of soils having common internal soil characteristics.

Green-manure crop. Any crop grown and plowed under for the purpose of improving the soil, especially by the addition of organic matter.

Horizon, soil. A layer of soil, approximately parallel to the soil surface, with characteristics produced by soil-forming processes.
Horizon A. The master horizon consisting of (1) one or more mineral horizons of maximum organic accumulation; or (2) surface or subsurface horizons that are lighter in color than the underlying horizon and that have lost clay minerals, iron, and aluminum with resultant concentration of the more resistant minerals; or (3) horizons belonging to both of these categories.
Horizon B. The master horizon of altered material characterized by (1) an accumulation of clay, iron, or aluminum, with accessory organic material; or (2) more or less blocky or prismatic structure together with other characteristics, such as stronger colors, unlike those of the A horizons or the underlying horizons of nearly unchanged material; or (3) characteristics of both these categories. Commonly the lower limit of the B horizon corresponds with the lower limit of the solum.
Horizon C. A layer of unconsolidated material, little affected by the influence of organisms and presumed to be similar in chemical, physical, and mineralogical composition to the material from which at least a part of the overlying solum has developed.
Horizon D. Any stratum underlying the C, or the B if no C is present, that is unlike C, or unlike the material from which the solum has been formed.

Internal drainage. The movement of water through the soil profile. This rate is affected by the texture of the surface soil and subsoil, and by the height of the ground water table, either permanent or perched. Relative terms for expressing internal drainage are as follows: *Very rapid, rapid, medium, slow, very slow,* and *none.*

Leaching, soil. Removal of materials in solution.

Massive. (*See also* Structure, grade). Large uniform masses of cohesive soil, sometimes with ill-defined and irregular breakage, as in some of the fine-textured alluvial soils; structureless.

Morphology. The physical constitution of the soil expressed in the kinds of horizons; their thickness and arrangement in the profile; and the texture, structure, consistence, porosity, and color of each horizon.

Mottling, soil. Contrasting color patches that vary in number and size. Descriptive terms are as follows: Contrast—*faint, distinct,* and *prominent;* abundance—*few, common,* and *many;* and size—*fine, medium,* and *coarse.* The size measurements are the following: *fine,* commonly less than 5 mm. [about 0.2 in.] in diameter along the greatest dimension; *medium,* commonly ranging between 5 and 10 mm. [about 0.2 to 0.6 in.] in diameter

Reaction. *See* Acidity.

Relief. The elevations or inequalities of a land surface, considered collectively.

Sand. Small rock or mineral fragments with diameters ranging between 0.05 mm. (0.002 in.) and 2.0 mm. (0.078 in.). The term sand is also applied to soils containing 90 percent or more of sand.

Series, soil. A group of soils that have the same profile characteristics and the same general range in color, structure, consistence, and sequence of horizons; the same general conditions of relief and drainage; and usually a common or similar origin and mode of formation. A group of soil types closely similar in all respects except for the texture of the surface soil.

Silt. Small mineral soil grains ranging from 0.05 mm. (0. 002 in.) to 0.002 mm. (0.000079 in.) in diameter.

Single grain. Each grain taken alone, as in sand; structureless. (*See also* Structure, soil.)

Slope classes:

	Percent		*Percent*
Level	0–½	Gently sloping	3–7
[illegible]	[illegible]	[illegible]	[illegible]

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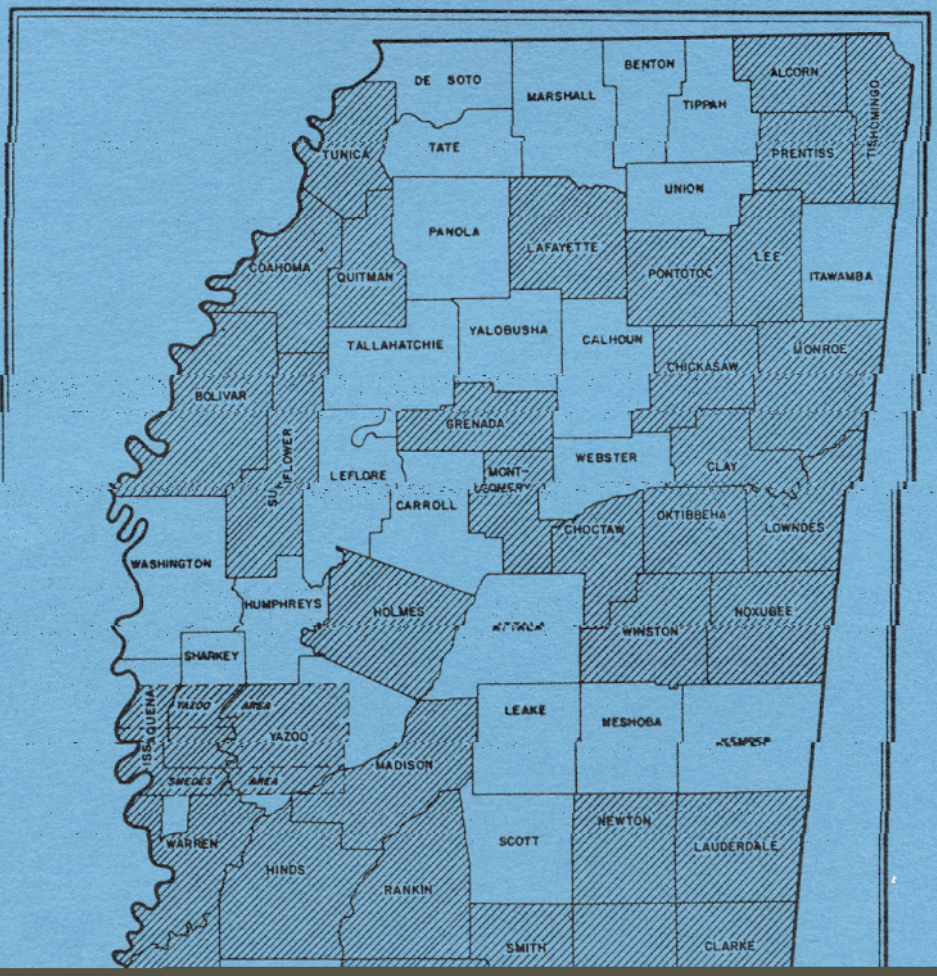
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